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The Massachusetts Medical Society

Section of Medicine

THE PHYSIOLOGICAL BACKGROUND FOR THE SYMPTOMS OF THYROID FAILURE, WITH A CONSIDERATION OF THE RESULTS OF TREATMENT*

BY CHARLES H. LAWRENCE, M.D.

From the Endocrine Clinic of the Evans Memorial, Boston.

Evans Memorial Publication No. 129-A-75

SINCE Gull's report[1] in 1873, "On a Cretinoid State Supervening in Adult Life in Women," the term myxedema, coined by Ord to describe the peculiar conditions of the tissues in Gull's cases, has been practically a synonym for thyroid failure, and the presence or absence of the peculiar appearance described by Gull has been generally accepted as the criterion by which hypofunction of the gland could be determined. The possibility that myxedema might be lacking, although the thyroid function was depressed was, until recently, hardly considered. A disease in which the diagnosis can be made by inspection, and for which a simple and satisfactory form of treatment exists, is less likely to be exhaustively studied than one in which diagnosis and treatment are difficult.

In the last decade, however, the development of methods of studying the metabolic processes of the body has brought to light the fact that patients might exhibit many of the symptoms and functional derangements characteristic of thyroid failure, and yet fail to exhibit its so called pathognomonic sign—myxedema. Various authors have described such a syndrome[2, 3, 4], under the term "incipient hypothyroidism," "atypical hypothyroidism," or some designation indicating doubt that it was identical, in its etiology, with myxedema. The depression of the basal metabolic rates in the patients studied was extremely suggestive of thyroid hypofunction, but the absence of overweight and the classical myxedema in many cases has made the profession sceptical as to the identity of the cause of two syndromes having such dissimilar physical characteristics.

*Read before the Massachusetts Medical Society, June 9, 1926.

The question can be settled only by a careful analysis of a series of cases showing symptoms and metabolic derangements characteristic of thyroid failure, and by determining if possible what disturbances of function are associated with various symptoms, especially with the presence or absence of myxedema.

This paper is the result of such an analysis of forty cases in which a complete study has been made of those vital functions known to be controlled or greatly affected by the activity of the thyroid gland. Chart 1 gives the outline for the routine followed in the metabolism study of the patients, the results of which are controlled by a careful history and physical examination in every case, and by such special examinations as seem indicated in each individual. The results obtained have been separated into two groups, according to the presence or absence of myxedema, and an attempt has been made to determine the similarities and contrasts in the two groups.

Before comparing the findings, however, it is necessary to consider the nature of the symptom which separates these groups by its presence in one and its absence in the other. The term, myxedema, not only describes a clinical appearance but more properly is applied to the substance causing that aspect. Its exact chemical constitution is unknown, though it is generally agreed that it contains mucin. According to Janney[3] "the best supported view regards myxedema as a reversion to an embryonic type of tissue such as is found in the umbilical cord." Whether the clinical appearance is due to infiltration of the tissues by this myxedematous substance, or to its elaboration in certain areas by the subcutaneous tissues has not been determined. Janney[3] concludes that the question

"urgently requires restudy with the aid of modern chemical technique."

Until such studies have been completed there is no evidence that myxedema is an essential condition of thyroid failure in any such specific way as is hypometabolism, nor is there any method of proving its presence or absence in a given patient except the rather uncertain one of inspection. Since, however, that method sufficed to establish the relation between myxedema and hypothyroidism, I have thought it an adequate criterion for the purposes of this study.

CHART 1

Vital Function Report

GENERAL SUMMARY

Service Form 1 Case No.

Name Series No.

Address Dr.

Sex Age Cond. Date

ROUTINE

Amount	cc.	cc.
Spec. Grav.	@ 15°	@ 15°
Total Solids	gms.	gms.
Nitrogen	gms.	gms.
NaCl	gms.	gms.
P^2O^5	gms.	gms.
Abnormal		

NITROGEN PARTITION

Amount	cc.		cc.	
Total N^3	gms.	%	gms.	%
Urea N^3	gms.	%	gms.	%
Uric N^3	gms.	%	gms.	%
NH^3-N^3	gms.	%	gms.	%
Creat. N^3	gms.	%	gms.	%
Resid. N^3	gms.	%	gms.	%

BASAL METABOLISM

Mean of deter. Cal.

H. B. Norm Cal. %

Du B. Norm Cal. %

Blood Pressure Temp.

Pulse Respiration

SPECIAL TESTS

BLOOD EXAMINATION

Morphological (abstract)

Chemical

Non-Protein Nitrogen	mgm.
Urea Nitrogen	mgm.
Uric Acid	mgm.
Creatinin	mgm.
Sugar	mgm.

Wassermann

PHENOL SULPHONE PHTHALEIN

	1st Hour	2nd Hour	Total
1	%	%	%
2	%	%	%
Av.	%	%	%

GALACTOSE TOLERANCE

Dose

Excret

Tollens Osazone

PHYSICAL

Weight kg. Trunk cm.

Height cm. Chest (cir.) cm.

Area sq. m. Chest (vol.) cc.

VITAL CAPACITY

Weight kg. %

Chest cm. %

V. C. (Dreyer) cc. (A. B. C.) %

V. C. (West) cc. ( ) %

UREA CURVE

5-7	7-9	9-11	11-1

MISCELLANEOUS FUNCTION TESTS

		1	2	Average
1.	Amylase			
2.	Urobilinogen			
3.	Lactic Acid			
4.	Resp. Quot.			
5.	Alv. CO^3	mm.	mm.	mm.
6.	Salol	min.	min.	min.
7.	Iodipin	min.	min.	min.
8.	Amino N^3	%	%	%
9.	Loewi Adr.			
10.				
11.				
12.				

Turning now to the presenting symptoms elicited from the patients, (table 1) it is apparent that with one or two exceptions the incidence is about the same in the two groups. Fatigability, palpitation, headache, vertigo, abnormal

TABLE 1

SYMPTOMS OF THYROID FAILURE—40 CASES

	Myxedema present 10 cases	Myxedema absent 30 cases
Fatigue	80%	93%
Nervous depression and irritability	70%	40%
Memory loss	40%	6%
Dyspnoea	50%	26%
Palpitation	20%	26%
Vertigo	33%	20%
Headache	20%	26%
Abnormal weight	80%	66%
Normal weight (±10%)	20%	33%
Overweight (more than 10%)	60%	23%
Underweight (more than 10%)	20%	43%
Sensitiveness to cold	80%	23%
Deafness	10%	13%
Catamenia irregular	20%	33%
Delayed puberty (till 15th year)	0%	23%
Sterility (of married women)	40%	41%

weight, deafness, irregular catamenia, and sterility show no significant differences between the myxedemic and the non-myxedemic group. Memory loss, dyspnoea, overweight, sensitiveness to cold are more frequently met in the former, while underweight and delayed puberty show a significant majority in the latter.

The reason for these symptoms is not found in the general physical examination, which is

TABLE 2

LABORATORY FINDINGS

	Myxedema present Average	Myxedema absent Average
Basal metabolic rate	—27%	—24%
Pulse rate	63	67
Blood pressure	135/83	111/69
Alveolar CO_2	38.5%	37%
Blood		
Red count	4,700,000	4,800,000
Haemoglobin	77 %	87 %
Lymphocytes	40.2%	39.6%
N. P. N.	37.5%	33.0%
Urea N.	14.4%	14.7%
Uric acid	4.2%	3.5%
Sugar	96.5%	99.6%
Urine		
24-hour output	1413 c.c.	1176 c.c.
Specific gravity	1.014	1.014

usually significant only because of its negative results as regards organic disease, though it often brings to light evidences of malnutrition and early arteriosclerosis, and establishes the presence or absence of myxedema.

It is in the various measurements of bodily function that the explanation for the symptoms of thyroid failure lies, and a study of these findings (table 2) makes clear the basis for its symptoms and the reason for their variation in the two groups under consideration.

In both myxedemic and non-myxedemic the sum of organic activity, as measured by the basal metabolic rate, is depressed, and equally so, on the average. The characteristic lymphocytosis is equal. There is a similar tendency to haemoglobinaemia in both groups, slightly more marked in the myxedemics. Hypotension, as determined by averages, is less constant with them than with the non-myxedemics, probably because of the greater frequency of arterial changes in the myxedemics. There is bradycardia in both groups, the average pulse rate being about the same in each. The blood picture is

TABLE 3

	Myxedemic	Non-myxedemic
Average age	56 years	38 years
" duration of symptoms	5 "	10 "
" vital capacity	—42%	—15%
" phenolsulphonphthalein output in two hours	34.5%	53.5%
Percentage of cases with		
Albuminuria	33%	10%
Glycosuria	10%	13%
Casts in urine	20%	7%
Blood N. P. N. above normal	33%	13%
" urea N. above normal	22%	33%
" uric acid N. above normal	50%	16%
Blood pressure above normal	80%	25%
" " 110/70–120/80	20%	17%
" " 100/60–110/70	0%	28%
" " below 100/60	0%	28%
Dyspnoea, palpitation or both	60%	34%
Maximum blood pressure	170/110	144/66
Minimum " "	116/66	80/56

almost identical, and the average values for the chemical analyses of the blood show no significant difference, though they are just above the conventional normal in the myxedemic group, and just below in the non-myxedemic. The alkali balance, as indicated by the alveolar carbon dioxide tension, shows a slight but equal downward tendency in both groups, and in both there is a tendency to diminished renal activity as indicated by the twenty-four hour urine output and its specific gravity. There is, however, no essential difference between myxedemic and non-myxedemic in so far as the accepted classical laboratory findings are concerned. There are, however, certain differences of degree, if not of kind, between the two. These are shown in table 3, and indicate a greater depression of cardiac and renal function in the myxedemic group, as shown by the greater average depression of vital capacity and phenolsulphonephthalein excretion, together with the more frequent occurrence of albumin and casts in the urine

and of nitrogen retention in the blood. It also makes clear a difference in blood pressure which the table of averages merely suggested. Hypertension is found almost three times more frequently in the myxedemic group than in the non-myxedemic, and, significant hypotension, which was not encountered at all in the former, is present in over half the patients in the latter. The maximum and minimum values give a fair contrast between the two groups in regard to arterial tension.

The cause of the greater incidence of depressed cardiac and renal function in the myxedemic is not definitely established. Age may be a factor as indicated in this series, but myxedema does occur in young individuals. In them, however, early arteriosclerosis is almost the rule, and the evidence is impressive that clinical myxedema and arteriosclerosis are intimately associated. The nitrogen retention in the blood, and the depression of renal function indicate that though cardiovascular degeneration occurs in the non-myxedemics, it does so far less frequently and in a much milder form than in the myxedemics. Certainly the greater frequency of dyspnoea or palpitation, and the marked depression of the vital capacity of the lungs shows a much more handicapped circulation in the latter. These differences raise the question whether myxedema is a symptom of thyroid failure alone, or of thyroid failure in which the function of the cardiovascular system has been seriously impaired by degenerative changes. As yet there is no evidence upon which to base a decision, but it is suggestive at least that in this series there was no demonstrable myxedema without some signs of cardiovascular pathology.

The important fact from the point of view of diagnosis and treatment, however, is that in both groups there is a depression of basal metabolic rate, of circulatory efficiency and of renal function, which forms the basis for many of the symptoms of thyroid failure.

The depression of the basal or basic metabolic rate means a depression of functional activity of all the organs concerned in furnishing energy and nutrition to the body. Therefore, the individual with hypometabolism is ill equipped to meet the ordinary demands of existence; and fatigability, or weakness, is the natural consequence. Consciousness of this physical handicap tends to produce mental depression or nervous irritability, which are probably aggravated by the malnutrition of the nervous system.

Not only is the production of energy diminished by the lowered metabolism, but the nutrition of the body cells is impaired by the qualitative and quantitative changes which take place. The blood is deficient in haemoglobin and therefore in its ability to carry oxygen, and its circulation is retarded by the bradycardia, low blood pressure and enfeebled heart beat.

This effect of thyroid failure upon the cardiovascular system has only recently received attention. Means[5] has shown that the cardiac output per systole may be reduced to 50% of normal, and that the rate of blood flow and the work of the heart is similarly diminished. Thacher and White[6] report that with the electrocardiograph the myxedemic heart shows the same changes that characterize the findings in myocardial exhaustion due to serious coronary sclerosis. Fahr[7] reports profound disturbance of intraventricular conduction. Wilson[8] remarks the frequency of cardiac disturbance in myxedema and hypothyroidism. There is ample objective evidence that the heart is subefficient in these conditions.

Clinically, the characteristic picture is one in which dyspnoea is much more prominent than palpitation. This is perfectly consistent with the fact that the force of the heart's contractions is diminished, so that the patient does not feel the heart beat, but is conscious of the dyspnoea. Another characteristic of the heart in thyroid failure is its inability, in most cases, to respond to increased demand by increasing its rate, a fact which helps to distinguish it from the heart affected by organic disease. Palpitation or anginal pain are as a rule found only in the older patients, in whom arteriosclerosis usually exists to a considerable degree. (Fishberg[9].)

In addition to the heart and arteries, the kidneys show a definite depression of function. The urinary output for twenty-four hours is frequently less than a liter. Albuminuria was present in nearly half of the cases in the series, and the average output of phenolsulphonephthalein is definitely lowered in both groups, profoundly so in the myxedemics. Add to this the nitrogen retention shown in table 3, and the evidence of depressed renal function is convincing. As a result, the patient with thyroid failure suffers from a toxaemia due to retention of waste products. This is probably an important factor in explaining the headaches which are not infrequently a prominent symptom of the condition, and possibly the parasthesias of which these patients often complain. It may also explain the impaired hearing and tinnitus, which are not uncommon in thyroid failure although low blood pressure and anaemia are probably also causative factors. Vertigo and memory loss are probably due largely to circulatory disturbance of the brain. In some patients this disturbance is functional, due to the low blood pressure and anaemia, in others, and these the larger group, arterial degeneration is an added factor.

Another important result of depressed thyroid function is its effect upon body weight. The typical myxedemic is overweight—so frequently that thyroid failure is still suspected by many of being the cause of most cases of endogenous

obesity, and thyroid extract is employed, without justification in my opinion, as a routine in its treatment. The figures in this series, however, show that, although most of the myxedemics are significantly overweight, those patients in whom myxedema is not present are more frequently definitely underweight. This apparent paradox can be explained, I believe, on the basis of three factors. The first is the diminished elimination which is characteristic of thyroid failure. Some at least of the obese patients' overweight is due to retention of fluid in the body. Second, the presence of myxedema accounts for some of the increased weight, and it will be noticed that it is the myxedemics who exhibit this symptom most frequently. Third, and this is the most important factor, there is in thyroid failure a diminution in the level of nutrition, which in some individuals results in obesity, and in others, is opposite. It is significant in this aspect that obesity is more common in the older group, while underweight shows a similar incidence among those in whom the failure began at the age in which bodily development is taking place. In both groups, the fundamental nutritional disturbance is the same, but in one it results in retention obesity; in the other in lack of proper anabolism. The effect of thyroid secretion is to normalize nutrition and weight and its lack brings about abnormalities of both conditions, but the weight abnormality may be in either direction, according to other factors which are operative. Sturgis and Whiting[10] have observed an initial loss of weight followed by a gain in individuals under thyroid medication, the loss being due probably to elimination of fluid and myxedema, the gain to improved nutrition. In my own experience, the hypothyroid patient who is underweight usually gains under treatment. There is no logical ground for the use of thyroid extract in the treatment of obesity, unless it has been proven that thyroid failure co-exists.

One other symptom of thyroid failure deserves consideration because of its frequency and importance. This is sterility, which occurred in 40% of the patients in this service. Pelvic examination revealed no anatomical cause, other than occasional slight undersize of the uterus, for the condition in any of these patients. Those who employed contraceptive measures were not included in the analysis. Impotence on the part of the male partner cannot be eliminated in all cases, though this was done wherever possible. Making allowances for this possibility, there still remains a high incidence of sterility in the group. Co-existent are disturbed catamenia and delayed puberty—the latter appearing in the younger non-myxedematous group. This association of sterility and menstrual disorder has been noted by numerous writers, notably Falta[11] and Janney[3] and has led those of the polyglandular persuasion to ascribe to the thyroid some specific and esoteric influence upon the ovaries. It must be remembered, however, that the reproductive function is among the most delicately adjusted of any in the body, and its disturbance or suppression is the frequent result in any process interfering with bodily nutrition, tuberculosis or diabetes for example. Therefore, in a condition associated with such profound metabolic disturbances as is thyroid failure, it is straining the point to predicate any other reason for the depressed sexual function than the malnutrition which is known to exist.

Indeed, the study of thyroid failure leads to the conclusion that all of its symptoms, apparently unrelated though they appear to be, are due to the disturbances of function and nutrition conditioned by it. The reason for the variation in symptoms lies in the fact of individual variation in reaction to malnutrition, and the clinical picture represents the sum of personal bodily reaction to disease or disturbed function. On this basis, the diversity of symptoms is easily understood, and on this basis, the necessity of proving the connection of a given symptom with thyroid failure before attempting to treat it with thyroid extract becomes apparent. Excepting myxedema, there is no symptom which may not be due to some other cause. Even the finding of a slightly diminished basal metabolic rate does not prove the presence of thyroid failure, any more than finding sugar in one specimen of urine proves the presence of diabetes. Like the latter, it does indicate the necessity of eliminating the condition most commonly associated with it, by bringing to bear all the tests likely to furnish useful information as to the patient's condition. If thyroid failure is proven to co-exist, any symptom may be expected to improve or disappear when metabolism and function are normalized by the use of thyroid extract, but no effect is to be expected from that preparation when the symptom is due to some other cause. Thyroid extract will reduce overweight if it be due to thyroid failure, or it will cause the patient whose underweight is due to the same disturbance in function to gain. It will cause symptoms of cardiac insufficiency to disappear if they be due to lack of normal thyroid function, but it will increase them if they are due to arteriosclerosis or the results of infection.

The degree to which the symptoms respond to medication depends considerably upon the presence or absence of organic changes associated with the hypothyroidism. Thus, in cases observed over a sufficient period of time, we have found that in some, evidences of nitrogen retention in the blood and of depressed renal function disappeared completely under thyroid medication, while in others they persisted unchanged even when the basal metabolic rate had been

normal for some time. The only reason found for this was the absence of demonstrable arteriosclerosis in the former group and its presence in the latter. The same observation holds in regard to cardiac symptoms.

Thyroid extract will normalize the function of organs structurally capable of normal function, but it cannot be expected to normalize irreparable tissue changes, even though they were thyrogenic in origin.

The amount required to bring about normal function in any given patient is an individual requirement, and cannot be satisfactorily calculated from the basal metabolic rate, pulse rate, or severity of symptoms. It must be determined in each case by trial, controlled by close observation of the patient and frequent determinations of the metabolic rate, weight, and circulatory response. Especially when cardiovascular involvement is present, it should be given cautiously at first, and as Christian[12] has pointed out, its administration, under such circumstances, may well be delayed until appropriate measures have put the heart in the best possible condition to stand the increased work which the increased metabolic acitvity will bring about. The presence of cardiac symptoms, however, is not a contraindication to the use of thyroid extract if thyroid failure is proved to co-exist, and the heart may be expected to benefit from its intelligent administration.

In conclusion, I wish to emphasize four points.

First, that the presence of myxedema, certainly as determined by inspection, is not essential to the existence of marked thyroid failure. There is considerable evidence that its presence is fully as dependent on vascular pathology as on diminished thyroid function per se.

Second, that abnormal fatigability of the body as a whole, or subnormal function of any of its parts, should, in default of demonstrable organic disease, suggest depression of thyroid activity.

Third, that the presence of such a depression can be determined, in the majority of patients, only by careful tests of vital function of which the basal metabolism is only one, and the administration of thyroid extract is not often justifiable without the evidences afforded by such tests.

Fourth, that thyroid failure produces symptoms through its specific effects on bodily nutrition, and may be expected to benefit symptoms only in so far as it can normalize the nutritional level of the body.

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Discussion

Dr. Donald Macomber, Boston: I think Dr. Lawrence has performed a real service in calling our attention to what I believe to be a definite clinical entity. My own experience has been from the point of view of sterility and during the past year we have had for one reason or another basal metabolisms done on a great many of our patients. In some 40 suspected cases of hypothyroidism, that is cases which showed either periods of amenorrhoea or delayed or scanty menstruation—or patients who were definitely over weight, we have had basal metabolisms done. Twenty of these patients showed a basal metabolism of somewhere between minus 10 and minus 35—not an extreme degree of lowering but apparently quite significant. These patients, as I have indicated, had symptoms of either periods of amenorrhoea, varying from one month to several months, in some instances as long as a year or more, or they showed scanty menstruation.

Now the interesting point in these patients is that they were all cases of sterility, and treating them with thyroid extract of the 20 we had three pregnancies that went through to full term and five patients who became pregnant but whose pregnancy ended in miscarriage. That, of course, should be compared with other series to show how efficient that treatment is. I am not attempting to make such comparison, but I think it is significant that we have had without other treatment in these patients such a proportion of success.

The other symptoms that Dr. Lawrence has called attention to, which were rather striking in our patients, were the low blood pressure, and the fact that these patients showed no sign of myxedema. They were all young women in the child bearing age. There was no evidence whatever of myxedema, no particular symptoms referable to the nervous system—just a general fatigability and a general inefficiency. Some of them complained of headache, some were over weight, a few were under weight, and in some there was no particular disturbance of the general metabolism as far as one could determine by the weight alone.

My particular point, however, is that sterility is a very important symptom in the women of the hypothyroid group who are in the child

bearing age just as Dr. Lawrence has said and treating these patients with thyroid often cures the sterility and may be a very important thing in relieving symptoms, such as disturbed menstruation and so on.

Dr. Lawrence also spoke of delayed puberty. That was a very important symptom in several of our patients who were not sterility patients. We had one patient whose menses had been delayed to the age of 18 when a full month of thyroid treatment caused them to appear and the development to go on. The pelvic examination of most of these patients with hypothyroidism, as Dr. Lawrence said, does not show any significant variation, except possibly a tendency to underdevelopment with a small uterus. Of course, patients with delayed puberty, on the other hand, are apt to show a very extreme infantile condition of the pelvic organs.

Dr. W. Richard Ohler, Boston: I also think that Dr. Lawrence has done a very good job on a difficult but increasingly important subject. During the past few years at the Boston City Hospital, Dr. Ullian and I have been interested in collecting such data as we could on various metabolism disorders. In this connection two points have been of interest: first, that clinical myxoedema as we have been taught to look for it is apparently much more common than has been suspected, suggesting the possibility that in the past many cases of clinical myxoedema have gone by undiagnosed. Incidentally, the two chief situations which are mistaken for clinical myoedema and which we have proven to be mistaken diagnoses, are secondary anemia and chronic nephritis.

Secondly, we have been interested to find a large group of cases of the type Dr. Lawrence has just designated as non-myxoedemic: that is, a case that does not present the clinical picture of myoedema but which has a lowered metabolic rate and which shows some if not all of the signs and symptoms of a lowered metabolism such as Dr. Lawrence has outlined in his charts. We have also noticed and in this agree perfectly with the speaker, that some of these cases are helped with thyroid therapy and some are not helped. In this connection it might be worth while to point out one or two conditions which might give a lowered metabolic rate and not be due to thyroid failure. A case in point—a patient comes in complaining of a number of the symptoms and signs suggested by Dr. Lawrence: weakness, easy fatigability, low blood pressure, a certain amount of sensitiveness to cold, and so forth. His metabolism is done and found to be minus 23. At the same time, as the result of further examinations, this man is found to have a right antrum full of pus. The antrum is drained, and the man immediately begins to put on weight and his metabolic rate promptly returns to normal without any aid from thyroid therapy. Another case—a business man presents himself with very much the same picture. His metabolism is low. Thyroid therapy is tried and it fails to improve the situation. On further questioning we find that this man has been hard at work with improper vacations. He is sent off to the woods for two months. Upon his return, his metabolic rate is normal, he has put on weight and his nervous symptoms have disappeared.

Now these are but two situations, and there must be many others. The point I wish to make is that we must not make our diagnosis on these cases with the metabolism machine alone because there are conditions which might cause a lowered metabolic rate other than thyroid failure. On the other hand, I believe if you have a lowered metabolic rate plus clinical symptoms, and if you can properly check up the situation with repeated metabolism tests, and if you can rule out other conditions which might cause a lowered metabolism, you are perfectly justified in trying thyroid therapy, appreciating the fact that in some the thyroid will do good and in others not. Where thyroid therapy does not give results, it is up to the physician to find out if there isn't some other cause, particularly some chronic infection which is causing the lowered metabolism.

I am also in perfect agreement with what Dr. Lawrence has said about the use of thyroid in the treatment of obesity. As a matter of fact, we have seen definite harm come from the empirical use of thyroid in such cases. Some are helped by thyroid, but the treatment should not be instituted until a lowered metabolic rate has been proved.

Dr. J. H. Means, Boston: I would like to endorse heartily what Dr. Ohler has said about the possible dangers of thyroid. I think thyroid extract or thyroxin is a drug which we ought to have a wholesome respect for; and I think the warning that some of these low rate cases will not respond to thyroid is something we ought to take notice of. I think Dr. Lawrence's paper and analysis is an interesting one. I don't think that everybody that presents a low metabolic rate is suffering from hypothyroidism. There may be many causes and I don't think we ought to use thyroid extract on patients without symptoms of myxoedema unless we go cautiously. Dr. Christian has called attention to the ill effects on the circulation of using thyroid extract too vigorously. The individual with myxoedema has a slow, feeble circulation, and the output of the heart is reduced, and as a matter of fact is reduced more than the metabolic rate, and if you give thyroid you whip the heart up and if his heart has been damaged, you may get symptoms of cardiac weakness.

I have recently seen an individual with myx-

oedema who presents a novel problem. If he gets no thyroid, he gets symptoms of myxoedema following subtotal thyroidectomy for angina pectoris. He is between Scylla and Charybdis. It is possible to keep him half way between, and on a sufficiently high metabolic level so that he can lead a reasonably active life and yet low enough to keep him free from attacks of angina.

DR. LAWRENCE (closing remarks): Drs. Ohler, Macomber, and Means have so well emphasized the important points in my paper that there are only two that I need mention. I agree heartily with Dr. Means that not all patients showing a lowered basal metabolic rate suffer from thyroid failure. If the rate is below —30, the diagnosis is almost certainly thyroid failure, but rates between —15 and —30, and the majority of low rates fall within that range, may be due to any one of several different causes. We have found them associated with pathological fatigue, syphilis of the central nervous system, or nitrogen starvation, as well as hypofunction of other endocrine glands. That is why some people with low basal rates are helped by thyroid, and others are not, and that is why we regard the basal rate as an insufficient basis for the diagnosis of thyroid failure. We have found, however, that by the use of a combination of tests such as I have described, it is possible to identify the various causes of hypometabolism with considerable accuracy. I would certainly agree with Dr. Means that thyroid extract is too potent a preparation to be given on suspicion, or on the basis of a low basal rate alone, unless it be very low.

In regard to the administration of thyroid to people with cardiac pathology, I think it is true that thyroid administration often increases the work of the heart more rapidly than it benefits its nutrition, and thus causes symptoms of cardiac insufficiency. But if enough time is allowed, the heart will "catch up" and in the end be better than if no thyroid is given. In some cases it is necessary to first give digitalis, with iron if there is marked anaemia, and some times it is necessary to put the patient to bed for a week or two when thyroid medication is begun, in order to minimize the work of the heart. After the nutrition of the heart muscle has improved, however, these same patients will have no disagreeable symptoms from thyroid extract, but will usually be relieved of the dyspnoea or palpitation which they originally had. The treatment of thyroid failure is not always so simple as it is generally believed to be, but if a patient is shown to really need thyroid extract, it is almost always possible to give it without ill effects, provided it is administered with due regard to its effect on the individual, who must be kept under careful supervision until function and nutrition have become normal.

ORIGINAL ARTICLES

THE FEEDING OF THE NORMAL INFANT AT BIRTH*

BY MAYNARD LADD, M.D.

THE subject to be discussed is the feeding of the normal infant at birth, not the difficult or pathological case. As fifteen minutes is my allotted time, I must state very briefly my points of view.

We are all agreed that the feeding of choice is mother's milk. We may, however, differ in opinion as to the extent to which it may be applied. It is claimed that certain methods of massage or stripping of the breasts after nursing will restore to failing breasts the normal milk supply. This may be partly true when the suckling infant is feeble, but I do not believe these mechanical methods of expression are more efficient than a strong, vigorous infant in maintaining the functional activity of the breast. There is an ingenious electrical breast pump, invented by Dr. Abt, which is advertised as solving the feeding problem by its ability to produce breast milk for all infants, in abundant supply, from dried up breasts. As I have not had an opportunity to use it, I obviously cannot comment upon its efficiency, but I think we can assume that there will always be many cases in which substitute feeding will be our last resort. Shall we approach the problem with doubt as to results or with confidence? I cannot follow a recent writer in a well known system of pediatrics, who makes the following statement:

"Babies can and have been many times reared by all of us without mother's milk and have shown no serious deviations from that normal development that regularly follows adequate breast feeding, and yet so exceptional are these cases that they loom big in our memories."

To accept such a statement would lower the standard which every pediatrist should set as his mark in substitute feeding. Given a normal healthy infant of 7½ lbs. at birth, under full control as to quality of milk, hygiene and intelligent care, we must exact of ourselves results which in weight development, muscular tone, dentitian, development of functions, morbidity and mortality shall compare favorably with breast-fed cases. Such standards must be the

*Read at the meeting of the New England Pediatric Society, April 9, 1926.

rule, not the exception, and should excite neither amazement nor lasting memories.

It is quite proper to conduct clinics to encourage breast feeding, but do not make the mistake of disparaging substitute feeding; for the chances are that in the same room on another day, the same organization is ably demonstrating to the same class of patients, adequate and successful methods of substitute feeding under intelligent supervision.

I must admit my sympathy with the newborn pediatrist who attempts to build a foundation of feeding from the study of the literature. The composite of all his extensive readings is likely to lead to strange theories and sometimes unfortunate results, until in the light of his own personal experience he eventually eliminates practices that are not sound. If all the authorities are to be accepted, it would seem as if it mattered very little what you gave the baby so long as the milk was clean. Diluted mixtures, and concentrated mixtures; many feedings of small amounts, and fewer feedings of large amounts; long intervals and short intervals; huge quantities of sugar and small quantities; sweet milk and milk soured with lactic acid cultures, U. S. P. lactic acid, lemon juice, vinegar (sauer kraut has still to be suggested) all seem to bring equally good results if pediatric literature is accepted without discrimination. And yet some writers find that successful cases "loom big" in their "memories."

In one clinic (not in Boston) unsuccessful feeding cases were explained to a visitor as babies that would not do well on any kind of feeding, so no effort of adaptation or variation from a routine was considered. In another instance frequent loose, undigested, scalding stools were passed over as negligible factors, as long as the weight chart pointed upward. All this is to say the least confusing to the serious minded student.

In the face of this introduction, it would hardly be fitting to attempt to formulate rules of feeding which pretended to be the last word upon all the points at issue. But perhaps I may be permitted to comment upon some of them.

First of all a word about "percentage feeding," a very unfashionable term to employ today. Percentage feeding in a broad sense (not in its earliest conception) is simply an expression of the relative proportions of the food elements to each other and to the total quantity. Today we find other methods in vogue to express such relationships such as (1) the total grams of fats, carbohydrates and proteins; or (2) the proportions of calories of fats, carbohydrates and proteins to the total calories; or (3) proportions of calories from milk to calories from added ingredients, etc. To my mind the essential purpose of expressing the food value of a formula, by whatever method used, is to enable a physician to check the effect of one food against another; to make him think, to make him attempt adaptation to individual needs, and to get away from haphazard feeding. Feeding methods or practices have a way of progressing in concentric circles, and the theories of today which are advanced as "new" have an amazing likeness to some of the things we heard or read about twenty-five or thirty years ago, witness the present vogue of milk acidified with lactic acid. It may be fashionable in another generation or less, to rediscover the advantages of expressing food values in percentages and total quantity. At all events the point is not so much the method which is employed as that some method should be used which permits accurate prescription and logical reasoning as to cause and effect.

Whole milk mixtures thirty years ago were not a success. Today they serve as the basis of most normal feeding, and the results are satisfactory. Why the difference? I think this lies in the quality of the milk produced today, compared with that of a generation ago. Because milk is clean and produced from scientifically rationed cows, we can get results which were formerly impossible. The movement for clean safe milk was a fundamental part of the principles sponsored by Rotch and the Walker Gordon Laboratory, and due credit should be given them for pioneer work in this line.

A recent reviewer stated that "percentage methods of feeding with its high fat contents is or should be obsolete." But it is interesting to note that he did not find fault with the high fat content of whole acidified lactic acid milk. What *is* obsolete in the percentage feeding of long ago, is the low protein percentages which were at one time advised. We recognize now that the ratios or percentages of fats to proteins in whole milk can be utilized at almost any age, and the importance of varying the proportions is not so great as we once supposed, therefore most mixtures today are whole milk mixtures and the necessity of expressing the percentage relationship of fats to proteins is not so vital as it once was.

We used to teach that the carbohydrate content of a food should not greatly exceed that present in breast milk, i.e., 7 percent. I am still of the opinion that that principle was a sound one although I realize it is the fashion today greatly to exceed this amount. I frequently see babies who are getting 15 or more percent of carbohydrates. I feel this is a mistake in policy and am confident sooner or later there will be a sharp reaction from the practice. Undoubtedly some babies grow fat on very high sugars, but others suffer. Scalded buttocks, loose undigested frequent stools, broken down digestions in later months, as shown in the va-

rious types of chronic intestinal indigestion, can often be traced to over feeding of carbohydrates in the early months. It used to be taught that high sugars in proportion with low fats was one of the chief dietetic factors in the production of rickets. I think that theory is sound, and believe that the rule of so much whole milk to the pound of weight and enough carbohydrate to make the baby gain reduces infant feeding to a rule of thumb which disregards the individual and not infrequently has its serious consequences.

In practical feeding, I cannot make myself adhere rigidly to a three or four hour feeding schedule. In breast feeding, the milk supply may be scanty or abundant. If scanty, the infant will require more frequent nursings and will stay longer at the breast. If abundant, the intake is sufficient to carry him over a four hour interval and the nursing time will be shortened. I have seen breast fed infants in the early weeks of life who thrived on four feedings in twenty-four hours, but I see no reason why that should be made a standard for substitute feeding. Then again if a baby is fed at four hour intervals five times a day and on a concentrated food, but is given three bottles of water between feedings—it is a fair question to ask what advantage has such a method over six feedings a day at three hour intervals with the water intake figured in the formula and no supplementary bottles of water given, except perhaps in very hot weather. In both breast and substitute feeding I find babies that do equally well on three and on four hour feeding, but I cannot myself tell by simply looking at a baby which regimen is going to produce the best result, and am quite content to accept the interval which best suits the baby. In substitute feeding three hour intervals by day, seven times in twenty-four hours; and six times a day when about three months old has given me best results in the majority of my cases. The average breast fed infant with an abundant milk supply, however, satisfies his caloric requirements on four hour feedings. One might formulate a rule to the effect that in general the feeding interval should be as long and the number of feedings as few as is consistent with the babies' comfort and with normal digestion and rate of gain. This rule practically applied means you will have to vary the procedure according to the state of lactation in breast fed babies and to the individual peculiarities, in cases of substitute feeding.

The importance of weighing a baby before and after nursing several times a day in the newly born breast fed infant is not appreciated by the general practitioner. It is not a very troublesome practice and it gives information of great help in handling the feeding problem in the first days. Inanition fever is often the result of insufficient fluid intake due to the tardy establishment of lactation. If the milk supply is scanty it points the way to supplementary feeding, at least for the time being, prevents excessive loss of weight and establishes normal metabolism on which proper weight development depends.

As my time is nearly up may I state briefly, without explanation, certain principles which have influenced my own practice of feeding.

Colostrum milk even if scanty plays an important part in establishing normal digestion and weight development in the early days of life and its use should be encouraged, even if the breast milk needs to be supplemented,—whether or not the mother can nurse her child permanently.

Babies who develop icterus neonatorum are slower to gain in weight at first and the physiological loss in weight is greater than when icterus does not occur. In such cases the feeding should not be pushed until the icterus is largely absorbed.

Water should be given after 12 hours, and a weak diluted whole milk with low sugar content after 24 hours and continued until the weights before and after nursing show a sufficient supply of breast milk.

A normal healthy new-born will take equal parts of milk and barley water of 1.5 percent strength with added sugar up to 5%, preferably a dextri-maltose. The barley water facilitates the subdivision of the curd, and may possibly contribute something of value besides because of its mineral and vitamin content. It is not given for its food value as starch, nor does its use even in the earliest days cause indigestion. The quantity of such a mixture should be such as to yield at least 45 calories per pound of weight. The smaller the baby, the higher must be the energy quotient, which in under-nourished babies several months old may be as much as 65, 75 or even 80 calories per pound. The fluid intake, or 24 hour amount, undoubtedly varies considerably, 14 ounces at the end of the first week, 18 to 21 ounces at the end of the second week, 24 ounces at the end of the third week and 28 ounces at the end of the fourth week and 32 ounces at the end of 2 months, represent a fair average intake for the healthy infant.

The protein requirement is usually satisfied at first by one gram of protein (or one ounce of milk) to each pound of weight, gradually increased to 1½ grams at 2 or 3 weeks and 2 grams at 2 or 3 months. When whole milk is used as the basis of feeding, the amount of milk required to supply the protein need supplies sufficient fat. Additional calories from added sugar should not exceed an amount that would

give more than 6 or 7 percent of total sugar in the mixture.

In my experience lactic acid mixtures, cultured or acidulated, offer no advantages over sweet whole milk in normal feeding cases, but are of great importance in cases of intestinal indigestion, acute and chronic, and in infectious diarrhoea. Whey mixtures have a place, and fat free milks with homogenized olive oil in certain types of difficult feeding cases, but these are not under discussion tonight.

Finally, the criteria of successful feeding are to be found in normal digestion, freedom from discomfort, regular and quiet sleep, and steady gain in weight. Unless these conditions are fulfilled, the feeding is not a success no matter how faithfully one has followed his own or some one else's particular methods.

SOME OBSERVATIONS ON THE PATHOLOGY OF THE PROSTATE*

BY J. DELLINGER BARNEY, M.D., F.A.C.S.

PATHOLOGICAL changes occur in the prostate gland with great frequency. From just after puberty even into advanced age it may be the seat of infection, both tuberculous and pyogenic; after about the fifth decade it may undergo adenomatous or neoplastic changes.

For the sake of simplicity I shall divide my remarks into (a.) those dealing with infections and (b.) those dealing with obstructive changes both benign and malignant. Infections of the prostate are rarely primary in that organ but have their source elsewhere in the body. Furthermore, it is far more common than is generally supposed to find the prostate giving rise to few or no symptoms even though it harbors deep seated infection or is extensively involved by cancer.

Tuberculosis of the prostate as a primary lesion, in the sense that no other organ of the genital tract is invaded, can be briefly disposed of by saying that there are less than a dozen authentic cases reported in the literature. One of these came under my own observation but was discovered only by the pathologist in the course of his examination of what I had supposed was a simple case of adenomatous hypertrophy. The symptomatology was only that of the latter lesion and the enucleation of the gland gave rise to no suspicion of the added tuberculous invasion. The patient made a smooth convalescence and at last reports was perfectly well in every respect.

On the other hand tuberculosis of the prostate is almost always to be found accompanying tuberculous epididymitis and is to be regarded as a secondary invasion from the latter organ. While there are those who regard the primary focus in the genital tract to be in the prostate I am prepared, after many years of intensive study of the question, to defend my opinion that with rare exceptions the disease begins in the epididymis and thence invades the prostate. Granted, however, that the prostate is tuberculous what are the objective and subjective symptoms? In the early stages of the disease there may be none whatever. Small and centrally located changes in a gland as large as the prostate may escape detection even with the most careful rectal examination. Under these conditions the history may fail to elicit complaints of frequency, urgency or dysuria and a negative urine will only add to the difficulties of decision. As the disease develops, however, the examining finger can easily detect the nodularity, the areas of induration and the sometimes unilobular enlargement which is so characteristic of the process. At this time there will also be found similar and perhaps even more marked changes in one or both seminal vesicles, the one on the side of the tuberculous epididymis showing the greater involvement. Even under these conditions the urine may be quite normal or it may contain pus or blood and sometimes tubercle bacilli in one or another combination, and in greater or less abundance. Also, as might be expected, the patient will generally complain of the usual symptoms of prostatic infection, namely, frequency, urgency and dysuria.

As regards the treatment of tuberculosis of the prostate, if one should be fortunate enough to have a case where the disease is primary in that gland and should be keen enough to make a diagnosis, general hygienic measures should be instituted. If, however, the disease progressed and in the presence of definite subjective symptoms prostatectomy would be indicated. On the other hand, tuberculosis of the prostate, secondary to tuberculosis of the epididymis, will subside and become clinically cured after removal of the epididymis or testicle on one or both sides. Those who advocate the radical removal of the entire genital tract for this condition have not only been unable to show any brilliant results, but have forgotten that after all the primary lesion in the body is situated in the lung or bronchial lymph glands and that unless this also is removed no so-called radical operation can be effective.

Pyogenic organisms, among which I include the gonococcus, find their way into the prostate with great frequency. In fact, I believe that

*Read at a meeting of the Haverhill Medical Club, November 4, 1926.

the prostate is far more frequently infected than we have hitherto suspected. By far the commonest invader is the gonococcus and I believe it no exaggeration to state that less than 5% of cases of gonorrhoeal urethritis escape without a gonorrhoeal prostatitis. The fact that the patient with urethritis may have none of the usual symptoms of bladder irritability associated with an infection of the prostate, and that palpation may show no demonstrable changes does not exclude this condition; on the other hand, proof of it may be found in the fact that rectal examination may show an enlarged, boggy gland, the secretion of which will contain pus in greater or less amount for a very long period of time, while in the early stages at least the gonococcus may be found by carefully conducted methods of examination. Were it not for the infection of the prostate our cases of urethritis would be cured in but a few weeks time, a circumstance which in fact occurs in those fortunate few who have only a urethral infection.

The well developed case of prostatic infection leaves one in no doubt as to its presence. While in the majority of cases there is abscess formation, these abscesses in spite of being multiple may be so small as to escape detection by palpation. The chronicity of the disease betrays not only their presence but also the inadequate drainage which nature provides in so complex a gland as the prostate. In a small percentage of cases abscesses of appreciable size can be detected by rectal examination. In a few the patient is prostrated by pyrexia, anorexia and sepsis and in addition suffers severely from localized pain, marked frequency of urination, great urgency and agonizing dysuria. He may even have complete retention of urine. In these instances rest in bed, frequent hot rectal and urethral irrigations and opium suppositories may result in spontaneous rupture of the abscess into the urethra, sometimes into the rectum, and fortunately, rarely into the retroperitoneal pelvic tissues. Where palliation does not soon put an end to the process surgical drainage must be performed, this being demanded not only for the purpose of putting an end to a distressing condition, but also to avert the fatal termination which so frequently follows the rupture of the abscess into the retroperitoneal space.

For the vast majority of cases the palliative measures already indicated will suffice, to be followed as soon as it seems good judgment to do so, by massage of the prostate. Massage persistently, frequently and thoroughly performed over a period of weeks and often of months has been and still is the only method by which the prostate can be completely and permanently freed of its infection. The cases which are not cured in this way have not been massaged persistently, frequently and thoroughly. Also, it may be worth while to say that this method of treatment must be carried out even though preceded by surgical drainage, as after all no operation, short of complete removal of the gland, will reach or drain the miliary abscesses with which the prostate is sprinkled. No case is to be considered as cured until the prostatic secretion when examined under the microscope shows no organisms and no pus and not until these negative findings have been obtained over a considerable period of time.

Other organisms invading the prostate and producing symptoms of greater or less severity and chronicity are the colon bacillus, the staphylococcus and the streptococcus. What has been said as regards the symptomatology, treatment and prognosis of gonococcal prostatitis applies to these infections as well. Their etiology, however, is not always clear. Generally speaking a focus of infection elsewhere in the body may give rise to them and for this reason the non-gonorrhoeal infections may not only occur in men of advanced years, but also in those whose moral status is not to be doubted.

By far the most important and most interesting lesions of the prostate are those produced by adenomatous changes and by carcinoma. Whereas in the patient with a prostatic infection one usually has to deal with a young and otherwise healthy man, the patient with adenoma or carcinoma must be made the subject of careful medical and surgical study. Not only does he show the changes in circulatory, gastro-intestinal and urinary tracts incidental to middle life or advanced age, but in addition he is toxic to a greater or less degree from the fact of inadequate drainage of his bladder and kidneys. Under these conditions the surgeon must first of all be a physician with the physician's skill to treat the diseased patient as well as the diseased prostate.

Before proceeding further let me suggest that whether the prostate be adenomatous or malignant the old term of "hypertrophy" is not applicable in many instances. Many, perhaps most, cases show definite enlargement of the gland, but what about the many others who show neither by rectal examination nor by cystoscopic inspection any enlargement at all? In fact, the prostate may be actually atrophic in size, yet this type of case may suffer quite as much from symptoms of urinary obstruction as those with a marked enlargement of the gland. It seems better then to speak of an "obstructing" prostate, benign or malignant, as the case may be, rather than of a hypertrophied prostate, for the latter term is so frequently incorrect. Furthermore it is true that whereas a much enlarged prostate may give rise to few or no symptoms, a nodule of prostate no larger

than a bean will, if situated in a certain relationship to the bladder orifice, produce marked or even complete urinary retention.

The symptoms of benign obstructing prostate are too well known to make their recital at the present time worth going into. There are, however, certain cases which deceive by their lack either of subjective or of objective symptoms. In the first category there is the patient who in the course of a routine examination is found to have pyuria. Perhaps he is feeling a little "run down," has lost a little weight and has a poor appetite. He has no appreciable diminution in the size or force of his urinary stream, urinates a normal number of times by day and perhaps only once at night and has little or no dysuria or urgency. Having an infected urine he would be expected to have at least slight bladder irritability. Rectal examination, however, shows a considerably enlarged prostate, probably benign in character, and on inserting a catheter into the bladder several ounces of residual urine are withdrawn. In another type of case rectal examination may show a prostate of apparently normal size and only by cystoscopic inspection does one find the enlarged median lobe which is causing the obstruction. The fact that there are no subjective symptoms may be accounted for by the fact that the bladder has been able up to date to compensate for the gradually increasing obstruction by an equally gradual and efficient hypertrophy and dilatation and that the infection has not yet become severe enough to cause the bladder disturbances which are generally found. One cannot, therefore, always be sure of the situation confronting him without thorough and painstaking study of his patient. There are in contrast other patients who are found to have a prostate of very definitely increased size but from which they have no symptoms at all. The urine may be negative and there may be no residual. In these cases the lack of symptoms is to be accounted for by the fact that the prostatic enlargement bears no important relation to the bladder orifice and that the native ability of the bladder to compensate for obstruction by hypertrophy and dilatation has been able to take care of the situation. Such a case will undoubtedly show the usual symptoms eventually and should be kept under careful and frequent observation.

The question now arises as to the indications for operation. In the type of case last mentioned with a hypertrophic but not obstructing prostate certainly no operative measures would be justifiable, unless one were to go on the principle that a prostate in a bottle of formalin never becomes malignant. The patient with an infected urine, with a residual of an ounce or more and who has nocturia and increased frequency by day certainly should be advised to have his prostate removed. The greater the infection and the amount of residual the less delay the better. Finally, there are those cases which come on the already well-filled border line, where the mild character of subjective symptoms, the small amount of residual (perhaps only an ounce or two) and the lack of pathological elements in the urine give rise to doubt in the mind of the physician as to what course to pursue. So long as careful and frequent observation assures him that the patient's condition is remaining in *statu quo* he may safely wait before advising operation. On the other hand, he would be influenced to advise this step by the onset of infection, by the gradual increase of the amount of residual urine and by the increase of subjective symptoms. There is, however, no hard and fast rule to be laid down as to when and when not to advise operation. The factors which have been enumerated are the most important guides, these to be taken in conjunction with one's general estimate of the individual patient concerned.

In coming to a decision in any case the fact must always be borne in mind that carcinoma of the prostate may be present when least suspected, and that statistics from various clinics show an incidence of this dread disease in about one out of every four or five men with an obstructing prostate.

All will agree that under these circumstances the prostate that is in the least suspicious by virtue either of its nodularity, irregularity of outline, density of consistency, or lack of normal mobility, with or without undue thickening in the region of the seminal vesicles, should be removed without delay as if any hope of cure is to be entertained the time for a radical operation is in the earliest stages of the disease. The most experienced finger may, however, fail to detect the changes described and only the pathologist, after painstaking examination of every scrap of tissue removed, will discover a small area of malignant growth. Cases such as these, accidentally discovered, as one may say, have excellent chances of cure. In cases which are further advanced and in which more or less prostatic tissue is left behind the probability of recurrence or of metastases is great. When a definite diagnosis of carcinoma of the prostate can be made before operation, this decision being based upon the stony-hard character of the gland, upon its nodularity and fixity, with extension of the growth around the seminal vesicles, the chances of cure are practically nil, even though an extensive and radical perineal operation is performed. The chances are lessened also by the fact that in almost one-third of these cases metastases have already occurred. With this fact in mind the question frequently arises as to the wisdom of operating upon a cancerous

prostate. In the presence of metastases and with but slight or even moderate urinary symptoms and a small residual operation should not be advised. There would be no justification for it. Without metastases and with similar symptoms one would be justified in carrying out the most radical operation possible and with some expectation of actual cure. At least the surgeon might expect to give his patient freedom from symptoms for a much longer time than if no operation was performed. When, however, there are well-marked symptoms of frequency and obstruction, operation should be undertaken for their relief. If there are no demonstrable metastases then as radical an operation as is possible compatible with the patient's safety can be done; if metastases are present then only enough should be done to afford relief, this generally consisting of a cystotomy with the insertion of a permanent suprapubic drainage tube of one sort or another. While life under these circumstances is not ideal it is at least more bearable than the one which the patient was leading previously.

Carcinoma of the prostate is deceptive and insidious in more ways than one. While usually it is accompanied by the usual urinary symptoms these may be entirely lacking, the patient's attention, as well as that of his physician, being drawn to other organs or parts. I have in mind a case recently seen where edema of one leg and dyspnoea were the only symptoms. X-ray showed extensive metastases in the chest and in the bony pelvis. The urine was normal and there were no bladder disturbances whatever. Rectal examination showed an enormous fixed prostate of stony consistency. Strangely enough there was no residual urine whatever. I have seen other cases which had been treated for lumbago, sciatica and other painful conditions where the mildness or entire lack of urinary symptoms had deceived the attending physician. These incidents make it clear that no physical examination is completed until a rectal examination is made.

I have already pointed out that in treating a case of obstructing prostate the surgeon must be a physician as well. His patient is toxic and must be de-intoxicated before an operation can be safely performed. No longer is it possible to operate upon the patient the day he arrives at the hospital. His urinary tract must be drained either by the insertion of a catheter through the urethra, or preferably, by a suprapubic cystotomy. The latter procedure is easily done under local novocain anesthesia and can be continued for an indefinite length of time. Furthermore, it does not complicate the situation if for any reason a perineal prostatectomy is to be done. Having established drainage it should be continued until there is no question at all either by means of the various laboratory tests of the blood chemistry and through that indefinite but valuable sense called "surgical judgment" that the patient is at his very best condition. While in the majority of cases this drainage need be continued for only a week or ten days, in others it must be carried on for weeks or even months before it is safe to proceed. It is always well to remember that it is better to drain too much than too little. Meantime, the flushing out process is augmented by the ingestion of all the liquids, especially water, that the patient can be induced to take. It is also well to remember that if water cannot be taken in sufficient amount, or if there seems to be no improvement normal saline solution, given by either the subpectoral or intravenous route should be resorted to promptly, copiously and frequently. I am sure that this simple method of therapeusis has saved more lives than any other one measure.

Another point I wish to bring out is that after operation the patient needs the same detailed attention as before it. The operation itself is, in a way, the least important step in the process of relieving an old man of his prostatic obstruction. For this reason, the surgeon must be able to see his patient personally at least once a day or even more often, throughout the duration of the case.

Before operating upon a patient with prostatic obstruction I believe it important not only to do a cystoscopic examination but also to have an x-ray examination of the entire urinary tract and of the bones, especially those of the pelvis and lower spine. The latter procedure will generally exclude unsuspected metastases and may reveal a silent calculus. The cystoscope will often help one to determine whether or no he is dealing with a malignant prostate, it will show the presence of a diverticulum of the bladder, a condition which might prevent permanent closure of the bladder, and it will also show the presence of neoplasm or stone. In other words, one should know all about his patient before he operates.

Finally, I would call attention to prostatic calculi which are found in a small percentage of cases. During the removal of a prostate for other conditions, especially adenomatous changes, it is not at all uncommon to find numerous small calculi embedded in the substance of the gland, of the presence of which there was no suspicion. In other instances rectal palpation of a patient with prostatic symptoms, these being more of irritability than of retention, will reveal areas of marked induration and tenderness sometimes giving a sense of crepitus to the finger. The diagnosis of prostatic calculi can thus be easily made and will be confirmed by the pre-operative x-ray examination, the impor-

tance of which has already been mentioned. Still less frequently there will be found but one calculus, sometimes of considerable size (I have a specimen the size of a hen's egg).

Generally speaking, the symptoms produced by prostatic calculi are due to the presence of the calculi rather than to the size of the prostate. Operation will be indicated in most instances for the relief of what is generally marked discomfort. On the other hand, I have seen patients with such calculi go for an indefinite time and with little or no discomfort.

Removal of the calculi practically always involves removal of the prostate as this organ will be found to be infected and otherwise seriously damaged by its calcareous content. In such cases I have found the perineal operation to be more satisfactory, not only because of the ready access it gives to the calculi but also of the fact that the adherent infected prostate can be more easily enucleated from below than from above.

While the scope of this paper and the time at hand prevent me from going into all the details concerning the various diseases to which the prostate is heir, I have tried to emphasize the points which experience has taught me offer the most difficulty and the most doubt.

CHRONIC CARBON MONOXIDE POISONING

Report of a Case Due to an Exhaust Heater

BY WYMAN RICHARDSON, M.D.

THE dangers from exhaust gases, especially with closed garages, has been repeatedly demonstrated by Yandell Henderson, C. K. Drinker and others, and has received considerable attention in the lay press. The case reported here indicates another source of danger from this treacherous gas.

J. S., a level-headed business man, 40 years old, came to the office on June 4th with the following story: He had been feeling exceedingly well until about three weeks before, at which time he began to feel lazy and lethargic. He would feel well on getting up, but at about noon-time the lassitude began coming-on, until at night he felt absolutely good for nothing. This feeling was soon accompanied by a severe, upper half headache. There was no nausea, or vomiting, the bowels moved daily. There were no genito-urinary symptoms.

The family and past history were entirely negative, save for an operation for a dental cyst about three years before and a drainage of a foreign body pelvic abscess many years ago.

Physical examination was entirely negative. There was no sinus tenderness; the teeth appeared to be in good shape. Heart, lungs, abdomen, and extremities were negative. Knee jerks were active and equal. The systolic blood pressure was 150, the diastolic 90.

Urine examination showed a specific gravity of 1.006 (the patient had just drunk a lot of water), no albumen, and no sugar.

In view of all these negative findings, and because of the suspicious story, the possibility of carbon monoxide poisoning came to mind. Further questioning revealed the following facts. The patient, just previous to the onset of symptoms, had bought a new automobile. This car was of the sedan type, with an exhaust heater in back. The heater had caused considerable trouble by getting hot even when the valve was turned off. Furthermore, there were wide cracks in the floor boards through which had come the strong smell of exhaust fumes. The patient drove this car largely in traffic for ten miles or more every morning and evening and often much further.

On the basis of this story the assumption was made of carbon monoxide poisoning. The patient was advised to put away the new car for one week and to drive only the old one. This he did. By the end of the third day the symptoms had entirely disappeared, and he was feeling as well as ever. He then had the new heater's exhaust connection gone over, and a tight fitting rubber mat put down over the floor boards; but the headache returned, although much diminished in intensity. He then became disgusted, and sold his car, since which time he has had no symptoms.

COMMENT

It is unfortunate that I did not think of getting a sample of blood for carbon monoxide quantitation. However, in view of the fact that the patient was of the level-headed and unemotional type who never have symptoms without just cause; and in view of the clearcut story; and in view of the result of the application of a "therapeutic" test, the assumption of chronic carbon monoxide poisoning in this case seems justified.

In these days of coupes, sedans, and limousines, the majority of the automobile riding public seems content to ride about in a stuffy, unventilated, inside atmosphere, often not taking the trouble to open any windows. Perhaps there is less carbon monoxide inside the sedan than in the busy street. However, it did seem to be worth while to report this case; for it is likely that mild forms of carbon monoxide poisoning are fairly common but remain unrecognized. Exhaust heaters are dangerous.

REPORT OF A CASE OF CYANIDE POISONING

BY CHARLES D. HOWARD, S.B.*

THE following case of poisoning by potassium cyanide is of some interest because of deviation in some respects from what is commonly recognized as the normal course.

In November, 1926, a jeweler, single, aged 42, sent out his assistant to purchase cigarettes, the latter claiming to have been gone "less than five minutes," and returning to find his employer in a state of collapse. The man was removed to the hospital, where he died, without having made any statement, thirty-five minutes after the time of having been found, the total period therefore being about forty minutes.

At the time, he was engaged in cleaning silver, for which purpose a solution containing from one-fourth to one-half pound of potassium or sodium cyanide per gallon (15-30 grains per fluid ounce) is commonly used, although there was evidence that at the moment the agent actually being employed was a warm solution of ammonia, and not cyanide. Much potassium cyanide was found about the shop. The accuracy of the theory of cyanide poisoning, as first held, was later deemed questionable by physicians associated with the case, because of the unusual interval before death and because of the absence of certain symptoms regarded as typical for this poison.

Before collapsing, the man had attempted to make a will but had gotten no further than to scrawl eight words. As further indicating conscious acts believed to have been performed after swallowing the poison, there was testimony that after the clerk left the store, a woman, entering to make a purchase, was received by the victim, who emerged from the back shop in an obviously deathly sick condition and, saying that he was feeling very ill, requested her to call later.

The autopsy, conducted by the state pathologist nineteen hours after death, revealed the following facts: Appearance of face, normal; no froth on mouth and none had been noted; jaws at that time exhibited normal rigidity, nor had they shown clenching; eyes glassy and pupils dilated; fingernails had shown some violet at first, but quite white at autopsy; color of livores normal,—no light red had been noted; no involuntary evacuations, no vomiting and no convulsions. No odor of hydrocyanic acid at the mouth on percussion and none on removal of skull-cap. Upon opening the body, three physicians and the writer were agreed that the odor of hydrocyanic acid was quite lacking, a fourth physician however maintaining that he could perceive it. There was no ecchymosis of the lungs, but the latter were quite congested.

In short, many of the features accepted as characterizing cyanide poisoning were wanting, or unrecognized, in this case, a circumstance which obviously, in connection with a charge of homicide and in the absence of well-defined chemical evidence, would be made much of by the defense as ground for acquittal.

Further ground for such a defense would have been found in the most striking feature disclosed by the autopsy, which was a marked endarteritis of the coronary artery, this condition having been such that had it not been for the subsequent finding of cyanide, no little significance as bearing upon the cause of death would have attached to it.

Upon opening the jar containing the stomach, the odor of hydrocyanic acid was readily perceived. The stomach was intensely inflamed, brownish-red in color, with evidence of some corrosion. The contents, which included almost no solid matter and amounted to 360 c.c., were markedly alkaline to litmus and very fluid, with some blood. Application of the Prussian blue test to two c.c.s direct gave a marked test positively for hydrocyanic acid.

The distillations, commenced twenty-four hours after death, afforded the following results in terms of potassium cyanide equivalent, using the method of precipitation and weighing as silver cyanide: stomach and contents, 11.8 grains; liver, one-third grain; kidneys, one-tenth grain; blood from thoracic cavity, distinct traces; brain, distinct traces. As corroborative of the well-known tendency to decomposition and loss of hydrocyanic acid in the viscera, the distillation of a second aliquot of the stomach contents twenty-four hours later showed but three-fourths of the amount first found. The finding of 0.14 c.c. of alcohol per 100 grams in the liver and blood demonstrated that the man had partaken of a substantial amount of alcohol just prior to or immediately following ingestion of the poison. But 1.05 c.c. of alcohol was present in the stomach contents. The finding of a partially consumed gallon of alcohol in the victim's possession had led to the usual newspaper story of "death from poison booze," but this alcohol proved to be pure. Death was attributed to accidental poisoning.

An instructive feature is that notwithstanding at least four times the recognized fatal dose was taken, and this into a stomach empty of food, the victim continued to live for a period considerably longer than is associated by medical men with cyanide poisoning. This, however, is corroborative of the fact that the salt is usually less rapid in its final action than is the acid, it being a matter of record that in the case of the former, death has been delayed for hours and that recoveries, even, have occurred following the ingestion of considerable amounts of the salt, this doubtless being explainable by the condition of substantial alkalinity, with resultant gradual evolution of the acid. It should be significant, however, that even with retarded death, as in this case, collapse and unconsciousness following administration of potassium cyanide usually occur very promptly.

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TOXIC VOMITING OF PREGNANCY

A Case Illustrating the Neurotic Factor

BY HERBERT J. CRONIN, M.D., AND ELIZABETH ANN SULLIVAN, M.D.

Toxic vomiting in pregnancy may be so combined with nervous factors that adequate treatment is hindered and the symptoms aggravated. The treatment then depends on the recognition of which aspect, the toxic or nervous, is predominant. Much perplexity may be occasioned before this differentiation can be made as the symptoms of the two conditions may be closely interwoven. The physician's judgment is taxed by the rapid progress of serious symptoms, and the question of terminating the pregnancy may arise. However, as Polack[1] stated in his recent article, he has emptied no uterus for toxic vomiting in the past five years when adequate treatment was carried out. In the case reported below, the usual medical treatment was followed with but partial success until the nervous factor was recognized and treated.

Case. Mrs. M., age 23, three months pregnant, was seen for the first time on July 20, 1926. The noise of her vomiting could be heard from the street. She looked slightly toxic, was dehydrated and complained of abdominal pains. For the past three weeks she had vomited five or more times daily and had taken little food. During the pregnancy she had lost fifty pounds. The year previous she had miscarried when two months pregnant.

P. E. Weight 124 lbs. Height 5 feet, 2 inches. Temperature 98.6, pulse 100. Blood pressure 110/70. Urine negative. The uterus was enlarged to the size commensurate with a three months pregnancy and the lower inch of the urethra was markedly hypertrophied and showed a widely dilated meatus. Otherwise the physical and neurological examination was negative, but she appeared depressed.

A diet of thick soups, gruels, and sweetened fruit juices was prescribed with forced fluids, free catharsis, rest in bed and luminal every four hours. However, the vomiting continued, and as consistent coöperation at home was lacking, the patient was removed on July 25 to a private hospital where the above treatment was fully carried out. Constant proctoclysis, 5% glucose solution, was added and morphia, grains 1-6, twice daily, for pain or restlessness. Vomiting of two-thirds of the 60 to 90 ounces of food and fluid intake in 24 hours continued. The urine showed the slightest possible trace of albumin and the blood pressure remained the same. The abdominal pains persisted and jaundice was developing. There was tenderness and slight resistance over the gall bladder region and tenderness about the urinary bladder.

Gradually Mrs. M.'s mentality became cloudy. She appeared more toxic and dehydrated, with temperature 99.6 and pulse 110. The nervous symptoms rapidly increased, with noisy vomiting, soiling of the bed, exposure, retardation, disorientation and attempts to leave the bed. Catheterization was necessary because of retention. As the hospital was not equipped to care for her at this point she was removed to the Boston Psychopathic Hospital on July 29.

The biochemical findings were: Urine: albumin slightest possible trace, bile double plus; no casts were found but the sediment was filled with bacteria that on culture were pure colon bacilli. Blood: leucocytes 16,000, erythrocytes, differential count and smear negative. Hemoglobin 95%. Blood sugar .02%. Non-protein nitrogen 30 mg. Uric acid content 4.1 mg. Wassermann reaction negative. Blood pressure 120/80. There was a further loss of weight and strength.

At the Psychopathic Hospital there was a gradua diminution of the nervous symptoms, the retarda tion resolved in a few days and was followed by general restlessness. Food and fluid intake increased while the vomiting decreased. The tenderness over the gall bladder subsided and the jaundice lessened. The urinary bladder region remained tender with pains radiating into the kidney regions. The leucocyte count fell to 12,000, the temperature remained 99.5 and the pulse 105. On August 4 her nervous and toxic symptoms had so improved that she was discharged to her home. There remained a mild cystitis which was treated with sandalwood oil minims 5 every four hours.

Mrs. M.'s family history was negative. Her past history, including school and work record, was unimportant. Prior to the present pregnancy she worked at domestic service with her husband. She was considered to be of a cheerful disposition, but high tempered, and a voluble talker, as contrasted with her slow speech when ill.

On mental examination the patient admitted that for economic reasons she did not desire the pregnancy and also feared the pains of labor.

Since marriage she had been anaesthetic and had continued actively her previous habit of masturbation, which probably accounted for the urethral hypertrophy. She bathed herself locally several times daily, and also, for the past three years, had kept the genital hairs shaved.

Diagnostically, it appears that she had had physiological vomiting of pregnancy at the onset; however, with her neurotic predisposition, her conscious and unconscious strivings for a termination of pregnancy caused this vomiting to pass normal limits and out of her control. A catarrhal condition of the gall bladder was probably produced by the vomiting with severe retching, and the urinary tract infection could easily occur through the wide meatus from the frequent catheterization for retention. Mentally, she had a severe neurosis with anxiety and depression. A complete exposition of the motives and mechanisms revealed in this case cannot be given in this short account.

REFERENCE

1 Polack, J. O.: J. A. M. A., 87:4 (July 27), 1926.

Case Records
of the
Massachusetts General Hospital

ANTE-MORTEM AND POST-MORTEM RECORDS AS USED IN WEEKLY CLINICO-PATHOLOGICAL EXERCISES

EDITED BY R. C. CABOT, M.D.

F. M. PAINTER, A.B., ASSISTANT EDITOR

CASE 13021

TERMINAL INFECTION WITH NORMAL RESPIRATION

MEDICAL DEPARTMENT

A widowed Irish-American housemaid of sixty-seven entered the hospital November 23 with pyrexia, at times excited and mildly irrational. A complete history was not obtained.

As nearly as could be learned from her brother, who had not seen her for about a year, she had been subject to bronchitis and to dyspnea on exertion. Two years before admission she had a "bad time" because of a combination of these ailments. He did not know how long she had had her present symptoms.

Clinical examination showed a rather obese woman, cyanotic, flushed and dyspneic. The skin was hot and dry. The tongue was dry. The chest was barrel shaped. Expansion was limited, especially on the right. At the left base was dullness, increased tactile fremitus, diminished bronchial breathing and an occasional coarse râle. Throughout the remainder of the chest there were coarse moist râles, even at the apices, with an occasional sibilant groan in the hilus regions. The apex impulse of the heart was not seen or felt. The left border of dullness was 10 centimeters from midsternum, 1 centimeter outside the midclavicular line. The supraclavicular dullness was 4 centimeters, the right border 2. The sounds were faint. There was a systolic murmur at the apex. The radials were thickened, the brachials slightly tortuous. The blood pressure was 85/50. The abdomen was greatly distended. There was an external hemorrhoidal rosette. The hands showed coarse tremor. There were slight Heberden's nodes. The pupils were small, regular, reactions questionable. The reflexes were sluggish.

There is no record of the urine. Blood examination showed 16,000 leucocytes, 92 per cent. polynuclears, 5 per cent. eosinophils, numerous early polynuclears, most of them so granular as to make differentiation from eosinophils difficult; hemoglobin 70 per cent., 5,000,000 reds, smear normal. The blood taken was insufficient for a Wassermann test. Non-protein nitrogen 42 milligrams. Blood culture showed no growth.

The temperature was 103.8° to 106.3°, the pulse 101 to 155, the respiration normal.

Orders: November 23. Soft solids. Force fluids. Digitalis three grains twice a day by mouth. For unproductive cough codeia half a grain by mouth every three hours p.r.n. For marked restlessness morphia sulphate one-sixth grain s.c. every four hours p.r.n. Chest swathe. Soapsuds enema at once and twice a day p.r.n. for distension. Cascara sagrada six grains daily. Digalen intramuscularly six grains immediately. Caffein ten grains s.c. Atropin 1/100 grain s.c., repeat in half an hour and again in two hours. Caffein ten grains s.c. every hour p.r.n. Rectal tube inserted, give pituitrin, obstetrical, one ampule intramuscularly; repeat in two hours. Oxygen p.r.n. by nasal catheter. Digalen intravenously three grains at once.

The dyspnea and cough increased rapidly after admission, somewhat controlled by narcotics. About 4 p.m. expiratory grunt became marked and cyanosis more apparent. About three hours later tracheal râles were heard. Because of the need for more rapid digitalization digalen was given intramuscularly and later intravenously. At seven o'clock the respiration was irregular, 8-10 minute. Caffein and atropin gave no great immediate relief. At eight o'clock venesection was done and 360 cubic centimeters of blood removed, lowering the blood pressure in half an hour from 90/60 to 60/40. Following this the breathing became less labored and the moisture in the lungs cleared somewhat. Oxygen was administered by a nasal catheter almost continuously after half past six, giving definite decrease in the cyanosis. A rectal tube with intramuscular pituitrin relieved the distension. The heart sounds however remained faint and rapid. After ten p.m. the blood pressure could not be read at the elbow, although a faint pulse was still palpable at the wrist. In spite of repeated caffein injections the patient did not rouse from coma. The pulmonary edema slowly increased. At four o'clock the next morning she died.

DISCUSSION

BY RICHARD C. CABOT, M.D.

NOTES ON THE PHYSICAL EXAMINATION

I think there is doubt about that five per cent. eosinophils with that per cent. of polynuclears. I have never seen that combination. That is, a high polynuclear count always, in my experience, drives out the eosinophils. I think the stain was queer and the count wrong.

I suppose it is profitable to sum up the history as best we can, although I am much in the dark. This is the sort of case, with a poor

history and the patient herself not able to help us, where we are apt to go wrong.

The notable things seem to be the signs at the left base, the very low blood pressure, and the leucocytosis, all of which would go perfectly well with a pneumonia, perhaps depending on poor circulation through the lung, that is on a weakened heart, which is to be suspected because she has apparently had dyspnea and what has been called bronchitis, which ordinarily means a weak heart, for some time. So my guess on the facts we have is that she has had something impairing her myocardium and heart action, and has now an intercurrent infection, presumably pneumonia.

The chest swathe shows that they were thinking of pneumonia. The orders were for the sort of medication ordinarily given for pneumonia, which I suppose, therefore, was their diagnosis.

"Expiratory grunt" is put in because it is so common in pneumonia.

There is a difference of opinion among good observers as to the value of digitalis in pneumonia. I have never seen it do anything that convinced me that it was of value. On the other hand good observers such as Dr. Paul D. White think it does. I always hesitate to differ with him, but I have never seen it do any good.

One hesitates to do venesection with such low blood pressure, but they were in desperate straits. She was certainly going to die unless something was done.

The coma, I take it, was present in the beginning, though it is not definitely so stated.

DIFFERENTIAL DIAGNOSIS

I do not see any reason to change the guess that I made half-way through, that she died of pneumonia. That is, there are no signs here that pneumonia does not produce. It is one of the commonest of all causes of death at her age. But we certainly cannot suppose, with as much fever and leucocytosis as she has, that she is dying of pneumonia alone.

A PHYSICIAN: Do you attach any significance to the statement that two years before she had had a bad time? We do not know how long the present symptoms have gone on.

DR. CABOT: I should like to attach some significance to it, but it is not sufficiently definitely stated to start my imagination. I suppose it might have been pneumonia. People do have repeated attacks of pneumonia. But it is hard to guess.

DR. C. J. WHITE: Is not the non-protein nitrogen very high?

DR. CABOT: It is above the outside figure given here as normal, but we see a great many at forty-two, fifty, even sixty. We do not begin to think much about it until it is above sixty. That is, one gets to determining the normal ranges here with relation to what we see postmortem in the kidney. I do not see any reason to suppose that these kidneys are damaged. It is to be remembered that we have no urine examination, and a woman of her age might easily have damaged kidneys. But I should say that non-protein nitrogen figure was not enough in itself to make us accuse the kidneys. She could not get such a temperature as she had from uremia alone, but it might be a pneumonia on top of nephritis.

A PHYSICIAN: Do you attach any significance to the respiration's being normal and the pulse 155?

DR. CABOT: Yes. I am glad you pointed that out. It is not at all what we expect with pneumonia. And we do not hear of its quickening, but of its being slower later on. Nothing is said about a quickened respiration. I do not know what to say about that. It has to remain as an unexplained fact, if my diagnosis is right.

A PHYSICIAN: Could that go with the conjecture that the kidney is producing something?

MISS PAINTER: Her brother gave a diagnosis which I could not put into the summary.

DR. CABOT: A diagnosis which had been made previously?

MISS PAINTER: Yes.

A PHYSICIAN: Should you say she had a chronic heart condition as well?

DR. CABOT: Yes. I should say her heart had been weak, but I cannot say from what cause. There is no evidence here of valvular disease. It is the sort of case where there has often been a hypertrophied and dilated heart without valve lesions, which then weakens. But I am sure she did not die of heart disease. I am not at all sure that she did not have heart disease.

A PHYSICIAN: Could she have a leucocytosis from failing compensation?

DR. CABOT: No, she cannot, without anything else. I think we ought to find an infection here unless there is uremia, and I don't believe there is uremia.

A PHYSICIAN: Could she have a terminal temperature like this in miliary tuberculosis?

DR. CABOT: Yes. I suppose it is always wise to think of miliary tuberculosis, and I had not thought of it. At her age and with no evidence of previous tuberculosis it is certainly a rare thing, and it is as apt to quicken respiration as anything. We have some of the same points against that as there are against pneumonia.

I shall say she died of pneumonia, and that the heart was probably enlarged but did not show any valve lesion. Whether or not there was a fibrous myocarditis I know no way to say. I believe the kidneys will show only a share of the general arteriosclerosis which at her age is so common, but will not show nephritis. The

difficulty with that statement is that we have no examination of the urine. I am going merely on the symptomatology and on the non-protein nitrogen.

CLINICAL DIAGNOSIS (FROM HOSPITAL RECORD)

Lobar pneumonia.
Arteriosclerotic heart disease.

DR. RICHARD C. CABOT'S DIAGNOSIS

Pneumonia.
Probably hypertrophy and dilatation of the heart.
Arteriosclerosis, general and renal.

ANATOMICAL DIAGNOSIS

1. *Primary fatal lesion*

Lobar pneumonia (right upper lobe).

2. *Secondary or terminal lesions*

Arteriosclerosis of the coronary arteries and aorta.

3. *Historical landmarks*

Arteriosclerotic nephritis (slight).

DR. MALLORY: The interesting findings in this case were limited to the lungs and heart.

The pleural cavities were free from fluid, with old fibrous adhesions at the left apex and base. Over the pleural surface of the upper lobe of the right lung and the contiguous portions of the parietal pleura were large masses of fibrous adhesions. The left lung was negative except for a moderate degree of edema. In the right lung the upper lobe was large, distended, and failed to collapse as the chest was opened. By all odds the larger portion of it was of uniformly firm consistency, reddish gray in color. On the freshly cut surfaces minute yellow dots could be made out in the alveoli, and there was considerable fibrinopurulent exudate in the bronchioles. A very small portion along the anterior border, two by one centimeters in size, was deeper red, less gray, than the other, and of more normal consistency. The findings, I think, are fairly typical of lobar pneumonia, except that not quite the entire lobe was involved. Some people refuse to make a diagnosis of lobar pneumonia unless the absolute entirety of the lobe is involved. But it seems to me that really the more characteristic thing is the uniform distribution and age of the process in the so-called lobar pneumonia, as against a bronchopneumonia, where we get more or less widely scattered lesions, often of quite varying ages. Here the portion involved was three-fourths of a lobe, all in the same stage of hepatization. Here it had passed through the red and was beginning the gray stage.

Microscopic examination showed the alveoli filled with leucocytes, a moderate but probably somewhat decreased degree of congestion in the capillaries, and comparatively little fibrin as compared with many pneumonias.

The heart was small rather than large, weighed 240 grams. The valves were negative. The myocardium was normal in appearance and color, also histologically, in the portions examined. There was however very marked sclerosis of the left coronary artery for the first two centimeters of its length, with considerable diminution of its lumen and a moderate degree of calcification, some sclerosis of the aorta, slight in the ascending portion, increasing in intensity to the iliacs, which were pipe-stem in character.

The spleen weighed 100 grams, was soft, wrinkled, showing so much post-mortem change that the structure was practically unrecognizable.

The kidneys weighed 240 grams. The capsules stripped fairly readily, leaving a finely granular surface. The cortex was four millimeters wide. The medulla was deep red, the cortex rather pale. There was a very slight degree of arteriosclerotic nephritis, not, I think, of sufficient degree possibly to have caused any symptoms.

DR. CABOT: It seems to me the thing to remember in this case is that we have seen a pneumonia, proved to be such, with a normal or low respiration.

CASE 13022

ACUTE ABDOMEN IN A BABY

SURGICAL DEPARTMENT

A ten-months-old girl was brought to the Hospital August 6 because she was "fussy" and had fever and vomiting. Two weeks before admission, July 23, she was taken to a physician for these symptoms. Two days later she developed fever. By the 27th she was worse. August 5 she began vomiting everything she took. At noon the day of admission she vomited again. Her bowels moved five times August 5 and six times August 6.

She was normally delivered at full term and was breast fed for a month. Afterwards she was given Mellin's food and orange juice. She was fed now on plain milk, not boiled, and boiled water. She was always fussy and crying. She always cried at micturition.

Examination showed an irritable baby with a grayish appearance, looking acutely ill. The throat was red. The tonsils were injected. There was some flaring of the costal margins. The percussion note was impaired over the right chest front and back. Crying voice and breath

sounds were equal throughout. The abdomen showed marked distension, and after an enema was found to be more spastic in the right lower quadrant than in the left. There was only slight spasticity over the upper quadrants. The child flexed the right leg over the abdomen and cried when it was extended. There was thickening of the ends of the long bones. The heart was normal. There was no tenderness on rotation or flexion of the extremities. Rectal examination showed a fluctuant mass over the right lower quadrant. There seemed to be no marked tenderness on this side. The pupils and knee-jerks were normal.

There is no record of the urine. The blood examination showed 23,300 to 15,600 leucocytes, 38 to 39 per cent. polynuclears, hemoglobin 60 per cent., 3,760,000 reds, marked achromia and poikilocytosis, no marked anisocytosis, platelets normal.

X-ray showed prominent lung markings at each hilus but no areas suggesting consolidation. The sternal ends of the ribs were prominent, having the appearance of rickets.

The temperature was 101.9° to 105.1°, the pulse 150 to 210, with the terminal drop noted below. The respiration was 80 to 160.

August 6 operation was done. The baby became pulseless on the operating table. The temperature dropped from 104° to 97°, the pulse from 210 to 160. That night the child died.

Discussion

BY EDWARD L. YOUNG, JR., M.D.

The first thing to remember is that a ten-months-old child can have symptoms very much masked in all sorts of intra-abdominal conditions.

Unless this mass in the right lower quadrant felt by rectum was very definite I should not pay much attention to it, because rectal examination in a child is very difficult, and it is almost impossible to tell unless the mass is very definite.

There are several things here that point toward an intra-abdominal condition as a source of trouble: vomiting and upset bowels first; then the fact that the thigh was flexed on the right and apparently painful on extension suggests interference with the ilio-psoas group on that side. The fluctuant mass, if true, suggests that it is an abscess on that side. There have been no signs to suggest any one special thing. It is not the picture of intussusception. In the first place it would not go two weeks. The freedom from trouble between times, the intermittent pain and vomiting, and of course long before this the peculiar appearance of bowel movements, would give that away.

An appendix in a child of this age does not have to cause any of the symptoms we associate with appendicitis, partly because the child cannot tell us about it.

I note that this child was breast fed for a month and was then fed on plain milk, not boiled. We always have to consider the possibility of a tuberculous infection of the glands, a breaking down and an abscess, if that mass is actually present, due to the tuberculous glands. That is perhaps suggested a little by the low polynuclear count, only thirty-eight per cent. in a leucocytosis of a little over 20,000 and 17,000. Were they taken right together, and why the change? It is a little more of a change than the personal equation ought to account for.

Miss Painter: The 23,000 count was done at 5 p.m. on the 6th, and the other was done on the 7th.

Dr. Young: Right after operation.

Dr. Oscar Richardson: Does appendicitis occur at this age?

Dr. Young: It is not common, but it does occur. The cases under five years that I have seen have practically all been ruptured before they were operated, because the symptoms were indefinite.

The free movement of the joints suggests that this is not a tuberculous process in the joints. It seems to me very acute to consider a Pott's disease with abscess from that. I see nothing to do but to assume that the cause of trouble is in the mass that they felt in the right lower quadrant and to go in and give drainage on the basis that it is an abscess. I do not know which I should put down as my first choice.

A Physician: Would a pyelitis in an infant of this age ever go on to such a picture?

Dr. Young: We have to take the facts that we have here. In order to give a mass we have to have a perinephritic abscess pointing down in that region. It is hard for me to believe that that whole process could have gone on in two weeks. A pyelitis could give symptoms of this degree, the temperature, the picture, except that when we examine there is trouble up in the upper part, and this is very definitely in the lower. The tympany could be present as a reflex from kidney trouble, but I do not think that could fit in here.

Dr. Young's Pre-operative Diagnosis

Acute appendicitis?
Tabes mesenterica with abscess?

Pre-operative Diagnosis

Acute appendicitis.

Operation

Ether. A right rectus retracting incision was made. A mass could be felt just to the right of the midline. The intestine and mesentery were

slightly adherent to the peritoneum. In opening the abdomen the assistant thought that a nick was made in the intestine, although it seemed to the operating surgeon that the opening was through edematous mesentery. An intestinal stitch was taken in this area immediately without further exploration. Two rows of stitches were taken. Nothing more was seen suggestive of fistula. An abscess was found under the right rectus muscle well toward the midline. Pus poured down from the upper abdomen. The appendix lay in a mass with fibrin extending to the left from the cecum. No attempt was made to remove this as the patient was pulseless. Two small cigarette wicks were inserted into the abscess cavity, which was not particularly well walled off, and to the outer side of the cecum. The wound was closed in layers, the wicks passing up to the outer side of the rectus muscle.

Further Discussion

I am not at all sure we do know much more about it than we did before, because that description of the appendix is not necessarily a picture of a primary acute appendicitis. Moreover, they say "pus poured down from the upper abdomen." It may be a perinephric abscess. I have nothing else to suggest.

Clinical diagnosis (from hospital record)

Appendix abscess.
General peritonitis.
Operation for appendix abscess.

Dr. Edward L. Young's diagnosis

Appendix abscess.

Anatomical diagnosis

Gangrenous appendix with perforation.
Purulent peritonitis.
Operation wound.

Dr. Richardson: The abdomen was distended, the wall tense. The operation wound in the right lower quadrant was wicked. The umbilicus pouched and on section disclosed a small hernial sac which was empty. The peritoneal cavity showed a collection of pus in the lower left quadrant, upper outer part, and one in the region of the right lower quadrant which extended as exudate up along the right side and for a short distance over the surface of the right lobe of the liver. The liver itself was out of the picture, and there was no pyelitis. The intestines in the region of the lower half of the peritoneal cavity were weakly stuck together and at one point stuck to the top of the bladder. The cecum on section was negative.

The appendix from its base to the tip was a slightly dilated tube with gangrenous walls, in places perforated. The tube was buried in a mass of necrotic inflammatory tissue. This mass rested over the right psoas muscle but did not involve it. There were a few sutures in the wall of the cecum, but the mucosa opposite them was negative.

The mesenteric glands were negative. The portal vein and radicles were negative. The other organs of the body were negative.

This is the youngest case of appendicitis we have ever had here, I think.

CASE 13023

A ROUTINE DIABETIC—HYPOGLYCEMIC SHOCK

Medical Department

An American telephone inspector thirty-six years old was referred from the Out-Patient Department November 13.

Fifteen months before admission he came to the Out-Patient Department complaining of loss of ten pounds of weight during the past year, fatigability, and cramps in his legs after walking upstairs. Two of his children had diabetes. His wife had found sugar in his urine. Examination of the urine gave a yellow test. His blood sugar was found to be 286, his weight 144 pounds. He was put on a diet and was followed in the Diabetic Clinic. X-ray twelve months before admission showed areas of absorption around both central upper incisors. Eleven months before admission he was referred to the Skin Room for a dermatitis with vesicles and pustules, most marked in the right axilla. No diagnosis was made. Under treatment* the dermatitis disappeared in a month. All this time he was on a diet of carbohydrate 56, protein 58, fat 92, felt perfectly well, and held his weight between 140 and 145. Two months before admission he was in the Diabetic Clinic on a diet of 78-65-169, total calories 2065, weight 142. He was referred to the wards to become sugar free.

In the wards he said that all through his course of treatment he had had polydipsia, polyuria, slightly increased fatigability, pain in his calves, not cramps, after walking upstairs. The dermatitis returned in a very moderate form now and then,—small red itching, scaly papules on the flexor surface of the arm. Eight months before admission he had three attacks of dizziness lasting about a month and followed by excessive sweating, all following bowling. Three months before admission he had a numbness in his right thumb lasting three days, due

*Paste: zinc oxide ½ dram, starch and petrolatum each half an ounce.
Wash: zinc oxide 2 drams, calamin 1 dram, glycerin 2 drams, phenol 20 minims; water to make 8 ounces.

he thought to carrying his work bag. During the first few months of his Out-Patient treatment he took eight units of insulin a day, then ten. For the past four months he had taken twenty.

His family history was unimportant except that two of his eight children, both sons, had diabetes.

His past history showed no serious illnesses. Eight years before admission he had tonsillectomy because of quinsy sore throat every winter. Since the operation he had been well. Four years before admission he had a left inguinal hernia repaired.

Clinical examination was essentially normal.

The weight, urinary findings, blood sugar and insulin intake are shown in the table. The blood was normal. A Wassermann was negative. The stools were normal. The temperature chart was normal.

Date	24 hour amount in c.c.	Specific gravity	Sugar excre. per cent.	Diet				Blood sugar	Insulin	Weight in pounds
				Carbo-hydrate	Protein	Fat	Caloric intake			
Nov. 14	800	1.034	2.0	60	60	120	1560	190		134
Nov. 15	1900		.6	48	65	175	2027		10-10-10-10	
Nov. 16	2100	1.022	0	48	65	175	2027	138	10-10-10- 5	136
Nov. 17	1600	1.010	0	58	65	175	2087		10- 4-10	
Nov. 18			0	68	65	175	2127	151	10- 0-10	
Nov. 19			0	73	65	175	2147		8- 0- 8	
Nov. 20			0	78	65	175	2167		8- 0- 8	139
O.P.D.										
Nov. 30	2500	1.010	0	78	81	182	2274	70	12- 0- 0	139½

November 20 the patient was discharged to the Out-Patient Diabetic Clinic.

December 5 about three hours after breakfast he suddenly felt faint and fell to the floor in a convulsion. His wife attempted to give him orange juice but could not because she could not force his jaws open. His doctor gave him half a cubic centimeter of a solution of adrenalin 1/1000 and some preparation subcutaneously. In about two hours the patient was quite normal. The following day he returned to his work.

Discussion

BY ROY R. WHEELER, M.D.

This case constitutes a so-called "routine diabetic." Both of his sons were using insulin at home, and when he was first admitted to the Out-Patient Department we thought we could treat him satisfactorily without hospitalization. His wife under our direction gave him insulin. He did very well for a time, until about a month before admission a third child being suspected of diabetes he became so discouraged that he gave up all treatment and appeared in the clinic one morning showing considerable sugar and a trace of acid.

In this table we have his record in the ward and a note from the Out-Patient Department record. The twenty-four hour amount shows nothing in particular. Neither does the specific gravity. He had some sugar the first two days in the hospital and thereafter was sugar-free. The diet was increased and his insulin reduced as shown in the chart.

During the first forty-eight hours he was given multiple doses of insulin to render him sugar-free in the shortest possible time. There were no foci to be cleared up or other medical or surgical pathology, so his case was quite uncomplicated and he was built up to a discharge diet which was calculated according to his body-weight, age, sex and occupation.

When he was discharged from the hospital you will notice that he was getting two doses of insulin totaling sixteen units. On the first visit to the Out-Patient Department this régime was changed to one dose of twelve units in the morning, and when his reaction occurred he was taking but eight units once a day. So naturally we felt that his insulin was being reduced pretty rapidly and did not anticipate such a severe reaction.

Dr. Cabot: Do you know what his doctor gave him besides adrenalin?

Dr. Wheeler: I tried to find out, and I should judge it was glucose, because he said it was a large amount of liquid medicine.

Dr. Cabot: Do you think his doctor diagnosed him correctly?

Dr. Wheeler: His wife made the diagnosis. It is interesting to know that his wife made the diagnosis of diabetes also. Today it is quite a common thing in diabetic families for one member of the family to test the urine of others, if they feel the patient is a diabetic. We have one young Jewish boy who has tested many of his relatives and has discovered two diabetics among them.

Dr. Cabot: Was he taking the amount of insulin which is expected to do this thing?

DR. WHEELER: It is hard to judge. We see from the above that his insulin had been reduced rapidly, and I did not feel that he was so near the verge of a hypoglycemic shock. After he returned to work the increased muscular activity apparently reduced his blood sugar considerably. If we had seen him more often perhaps we could have anticipated that reaction.

Two or three years ago doctors used to be quite afraid of reactions, but gradually have come to the realization that no matter how alarming and severe insulin reactions may appear, no one has ever died from one. There have been one or two cases of very sick surgical diabetics who have died in apparent shock, but in the average ambulatory case I do not feel this unfortunate calamity is possible. I have seen one patient who was having such violent convulsions that we could do nothing with him for two or three hours, yet he was quite normal four or five hours afterwards.

DR. YOUNG: Without any medication?

DR. WHEELER: Without any medication for two or three hours.

A PHYSICIAN: Couldn't you get orange juice down his throat?

DR. WHEELER: Frequently it is utterly impossible. As soon as one attempts to do something for them they resist and almost always their jaws are clinched. Furthermore I doubt very much whether food by mouth would be absorbed from the gastro-intestinal tract with the patient in such a severe reaction. Ordinarily it is sufficient to give a small dose of adrenalin, one-half or one cubic centimeter. If this does not suffice, either intravenous or subcutaneous glucose is resorted to, which practically always restores him to normal within a very short time. On the other hand there is the occasional patient in severe shock in which no matter what one does immediate relief seems to be impossible. We recently had such a case in the hospital who in spite of large amounts of carbohydrate given by mouth, by rectum and intravenously remained in hypoglycemic shock for twelve hours. The possibility of disturbance in the calcium metabolism has been discussed of late.

DR. CABOT: Do they usually have convulsions? Is that the rule?

DR. WHEELER: No, convulsions occur only in the severe reactions. Ordinarily they merely feel faint, break out in cold perspiration, and get rather hungry. By taking five or ten grams of carbohydrate by mouth in the form of orange juice or even sugar, they prevent the reaction from progressing. This is rather an unusual but not rare story for such a severe reaction to come on so suddenly.

A PHYSICIAN: How much glucose do you give?

DR. WHEELER: We usually give ten or twenty grams. Buffered glucose is dispensed in ampules, 20 cubic centimeters of a 50 per cent. solution; one or two of these ampules is given intravenously, and I have never seen any injury to the tissues from using such a concentrated solution. However, adrenalin is the simplest and perhaps the most efficacious for emergency purposes.

DR. CABOT: Why does it act so well?

DR. WHEELER: Roughly speaking, the internal secretion of the pancreas lowers the blood sugar, while that of the adrenals raises the blood sugar by releasing the glycogen reserve from the liver.

DR. CABOT: What is the state of circulation?

DR. WHEELER: Quite good. The pulse is quite steady and of good quality, usually a little slow, and the blood pressure is not lowered a great deal. It has little similarity to surgical shock.

DR. CABOT: You feel about it something like an epileptic convulsion, that is a thing you don't worry about?

DR. WHEELER: Pretty nearly. But the reactions are so alarming to the family that we always make an attempt to bring them out of it.

DR. RICHARDSON: What is a convulsion an expression of?

DR. WHEELER: I don't believe it is quite understood. Perhaps the convulsions release glucose from the muscles, thereby raising the blood sugar.

DR. YOUNG: The convulsions will go with the calcium upset,—hyperexcitability of the muscles.

DR. WHEELER: The evidence of this is only suggestive. There have been very few determinations of blood calcium during severe reactions. One that I know of did have a low blood calcium.

DR. CABOT: I know a diabetic who had one of these attacks in the woods. He had no sugar with him, but he set all his friends hunting blueberries and got enough to bring him out of it.

A PHYSICIAN: Why should work reduce the insulin dosage?

DR. WHEELER: Physical exercise has a very distinct bearing on the blood sugar level. By exercise the muscles utilize more glucose and therefore the blood sugar is lowered, and if it is lowered a given amount of insulin would start its effect at a lower level than otherwise. This is well brought out clinically. By and large laborers do better diabetically than those leading a sedentary life.

A PHYSICIAN: I don't see why pancreatic activity has anything to do with exercise.

DR. WHEELER: It is not entirely a question of pancreatic activity. Consider a patient with a blood sugar of 100 milligrams, which is reduced 30 milligrams by 10 units of insulin. If

by exercising he reduces this blood sugar to 70 milligrams, then his insulin would lower the blood sugar to the reaction point.

DR. RICHARDSON: What about heredity in diabetes?

DR. WHEELER: In the Out-Patient Department there are only two families in which the hereditary tendency is at all well brought out,—this family and one other. I do not feel that there is much evidence, except in certain isolated families, to feel that diabetes has much of a hereditary tendency. This family of course is quite striking. We have one other that is even more so, but these are the only two instances in a clinic representing 500 or 600 families all told.

DIAGNOSIS

Diabetes mellitus.
Hypoglycemic shock.

REPORT OF AMERICAN PUBLIC HEALTH ASSOCIATION ON CONTROL OF COMMUNICABLE DISEASES

A REVISED report on the control of communicable diseases, drawn up by the committee on standard regulations of the American Public Health Association, has received the official indorsement of the United States Public Health Service, it was announced January 4.

The committee which drew up the report was composed of Dr. Haven Emerson, chairman; Robert N. Hoyt, Dr. F. M. Meader, Dr. J. C. Perry, and Dr. C. E. A. Winslow. In connection with the drafting of the report the committee voted its indebtedness "for their expert opinion and critical comment upon its tentative conclusions" to Dr. Simon Flexner, Dr. William H. Park, Prof. Theobald Smith and Dr. Bertram H. Waters.

The revised report of the committee on control of communicable diseases, it was explained, was presented before the public health administration section at the fifty-fifth annual meeting of the American Public Health Association at Buffalo, N. Y., on October 11, 1926.

Forty-two diseases are contained in the "List of Diseases" construed by the committee as of a communicable nature. These include: Actinomycosis, acute infectious conjunctivitis, anchylostomiasis (hookworm), anthrax, chicken pox, cholera, dengue, diphtheria, dysentery (amoebic), dysentery (bacillary), epidemic (lethargic) encephalitis, favus, German measles, glanders, influenza, leprosy, malaria, Malta fever, measles, meningococcus meningitis, mumps paratyphoid fever, plague, pneumonia (acute lobar), poliomyelitis, rabies, Rocky Mountain spotted or tick fever, scarlet fever, septic sore throat, smallpox, social diseases, tetanus, trachoma, trichinosis, tuberculosis (pulmonary), tuberculosis (other than pulmonary), tularaemia, typhoid fever, typhus fever, whooping cough and yellow fever.—*U. S. Daily.*

RESURVEY PLANNED ON PREPARED DRUGS

A RESURVEY of the entire field of pharmaceutical preparations is being undertaken by the Bureau of Chemistry, Department of Agriculture, in an effort to protect conscientious manufacturers, physicians and patients from products not up to standard as to strength, quality or purity, it was announced on December 29. The bureau is charged with the enforcement of the Federal Food and Drugs Act.

The Bureau of Chemistry is now preparing to resurvey the entire field of pharmaceutical preparations. It is the intention to include a wider range of products than was investigated in the first survey. In addition to hypodermic tablets and galenical preparations, there will be examined drugs in the forms of compressed tablets, tablets triturates, capsules, ampoules and others. As a result of the previous survey and regulatory action brought in connection therewith and as a result of the splendid coöperation from the manufacturers in studying intensively many of the problems involved and adopting more effective methods of control, it is believed that variations from declared standards throughout the entire field of pharmaceuticals will be much less than were found during the first survey. However, it is the intention, because of the general warning to the trade through the developments in the first survey, which impressed upon manufacturers the necessity for revision of their manufacturing and control methods wherever inadequate, to bring legal action during the coming survey on variations from standards whenever these are wider than warranted under adequate supervision. It is possible, therefore, that action may be taken in some cases which would have been passed over with a warning during the former survey.

The ultimate purpose of this work is to eliminate substandard drugs from the American market with as little confusion as possible, so that physicians can rely upon the accuracy of remedial agents which they prescribe or dispense.

To this end the continued coöperation of the industry is invited. There can be no doubt of the possibility of mutual helpfulness, and indeed, of general benefit, from an exchange of information and the results of research on such subjects as the supervision and control of the manufacture of potent drugs.—*U. S. Daily.*

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GOVERNOR FULLER'S MESSAGE

Once more the Great and General Court has convened and as is customary matters of concern to the Medical Profession will come up for hearings and decision.

The Commonwealth is fortunate in having as the head of its government a man who by his firm and courageous stand for law instead of rule by mass meetings and street parades has endeared himself to the great quiet thinking public and has made life safer throughout the State.

In his annual message the Governor advocates better protection against tuberculosis of bovine origin and against the typhoid carrier.

Of great importance is the following quotation from his message: "The practice of medicine and the practice of law are two of the most important professions coming under the control of the Commonwealth. Each should have the highest standards of excellence for they deal with the most precious possessions of the people.

"I recommend that the Board of Registration in Medicine be given discretionary powers to pass upon the qualifications of medical schools so as to protect our citizens from unqualified practitioners. I further recommend an increase in the penalty for illegal practice. Persons found guilty of this offense have resumed the practice of medicine. An increased penalty will have a deterring effect.

"In the matter of the standards for admission to the bar, the Judicial Council has recommended that the Supreme Court should have the power to make rules for admission. I endorse this recommendation.

"The unfit in these two great professions should be eliminated and hereafter only those qualified by training and possessing upright characters should be admitted to practice."

This endorsement of the attempts of the Massachusetts Medical Society and of the Bar Association to elevate the standards of the professions of medicine and law is most heartening. The Governor has kept the pledge made two years ago that he would do what he could to help in bettering our standards. If his recommendation is carried out, Massachusetts will occupy a high position in regard to medical practice.

The Journal has repeatedly published the official figures giving the results attained in examinations before the Board of Registration in Medicine by graduates of Massachusetts Schools. There are three in this State which send up year after year a very large proportion of men who are disqualified by their examinations. They are proven unfit. It is plain that there must be many others who, receiving the same instruction, are just able to get by and are licensed to practice.

The Board of Registration ought to be given authority to insist upon reasonable standards in schools in our own State and elsewhere whose graduates are to practice here. This measure of protection to the public is reasonable and necessary.

There have been sad and notable instances of late which show the need of better protection against illegal practice and criminal malpractice.

The Governor alone cannot bring about the results he desires. The Legislature must enact laws. The legislators will be subjected to pressure by all those keenly interested in special matters of advantage to them. Some members of the Legislature are influenced considerably by expressions of opinion they receive. There is no doubt that those interested in low standards will use their utmost powers to defeat the Governor's wishes. He has the right to ask and expect the support of every member of the Massachusetts Medical Society. This support must be more than a tacit expression of ap-

proval. If we are to attain what we have asked we must bestir ourselves. The Governor supports us in what we ask because he believes it right and for the public good. He has done his share. It is now the duty of every member of our Society to show his Senator and Representative that the demand for higher standards is real and is necessary.

AN ENLARGED STATE ANTITOXIN LABORATORY

A SHORT time ago a steam shovel plowed its way through the drifts of the winter's first snow and started breaking the frozen ground at the State Antitoxin and Vaccine Laboratory in Forest Hills. This marked the beginning of the new additions to the laboratory and stable buildings long looked forward to by the officials of the State Department of Public Health.

This laboratory was the first State laboratory established in this country for the purpose of furnishing free biologic products to the citizens of the State. Since its foundation in 1893, under a rigidly conservative policy, its distribution of antitoxins, serums and vaccines has steadily increased. Since the war the demand for products has taxed its facilities to the utmost and the time had come when no further extension of its services was possible.

With its increased accommodations, not only will it be possible for the laboratory to make an adequate supply of its products available to all physicians in the Commonwealth, but for the first time in some years it will be possible to utilize its unusual resources for investigation and instruction in applied immunology.

This laboratory will be able, furthermore, to a greater degree than ever before, to serve as a teaching center. To qualified students it will offer an exceptional opportunity for the study of bacteriology and serology as applied to the prevention and treatment of communicable diseases, and to members of the medical and public health professions, to nurses and others, it will continue, by means of exhibitions and demonstrations, to give instruction in the preparation and use of serums and vaccines.

This enlarged and modernized laboratory will stand as additional evidence of the wisdom of the Commonwealth's policy of State manufacture and free distribution of biologic products, of the untiring efforts of a former Commissioner, the late Dr. Eugene R. Kelley, and his successor, Dr. George H. Bigelow, of the wise and hearty support of His Excellency Governor Fuller and of the friendly and generous coöperation of Harvard University with the Commonwealth.

THE USE OF POISONS TO DENATURE ALCOHOL

REGARDLESS of our opinion regarding prohibition, we cannot do otherwise than hope that Secretary Mellon will be successful in his search for some non-poisonous method of denaturing alcohol. During the year just ended, the number of deaths in New York City due to alcohol poisoning numbered 741. Some of them might have been due to the excessive use of alcohol rather than to the poisons employed to render the alcohol unfit to drink, but when a woman dies as a result of taking whiskey to cure a cold, as did one of the recently recorded cases, it would seem that the penalty for breaking the law was too severe.

Every precaution is taken to guard against accidental poisoning from such chemicals as corrosive sublimate, yet poisoned alcohol is evidently being sold in large quantities.

The Administration is bound to enforce the law of the land, but experience has demonstrated that the employment of wood alcohol as a denaturing agent has but little value in the enforcement of this law. The penalty of death enacted only too often from those who drink "bootleg" whiskey is much more severe than was contemplated by the framers of the 18th Amendment. The use of poison in alcohol is analogous to the employment by a farmer of spring-guns to ward off the trespassers; the intruders have no legal right upon his land, yet we doubt if he would be judged within his rights if he protected his property in this way.

It may not be easy to discover a method of denaturing alcohol which, while effective, would be non-poisonous, but every effort should be made to find such a method. Certainly the cause of prohibition is not strengthened by the impressive number of victims of wood alcohol.

MAN'S FAITHFUL ALLY

DEVOTEES of tobacco incineration who have been blackguarded and condemned to the ranks of the nit-witted by certain scientific investigators, will find encouragement in a recent interview accorded the press by a noted professor of psychology in one of our foremost universities. According to this investigation, incomplete experiments on the effect of smoking on man have produced evidence in support of the belief that the man who smokes will be a more steady and dependable worker than he who, from moral, religious or physical reasons refrains from the courtship of our seductive Lady Nicotine.

Smoking, the eminent scientist admits, does increase the blood pressure slightly, but so does the telling of a good joke, and the effect produced by tobacco is not much greater than that produced by the joke.

Good jokes are few and far between—rare enough, indeed, to some as shining milestones in the weary pageant of life. Tobacco, on the other hand, is abundant. As cod liver oil is one of the most acceptable substitutes for sunlight, so many tobacco smokers eventually replace entirely the quaint old custom of telling jokes, for our blood pressure, communally speaking, must be kept to a level sufficient for the demands of the day.

Tobacco thus becomes the ideal drug-stimulant and sedative—the perfect control. We remember that in our youth—and we suspect the custom still survives—tobacco was tastily combined with molasses and pressed into plug form, in which condition it often served the rugged backwoodsman in place of three square meals a day. Here enters the caloric factor. Tobacco, being a leaf, must of necessity be rich in vitamines; the perfect food and drug. In these legislative days all that remains necessary to cap the climax of human effectiveness is a law prescribing the minimum per capita consumption of the weed.

THIS WEEK'S ISSUE

CONTAINS articles by the following authors:

LAWRENCE, CHARLES H. Harvard A.B. 1903, M.D. 1908; Instructor in Endocrinology, Boston University Medical School; Chief of Endocrine Service, Evans Memorial; Member of Society for Study of Internal Secretions. His subject is "The Physiological Background for the Symptoms of Thyroid Failure." Page 43. Address: 520 Commonwealth Avenue, Boston

LADD, MAYNARD. Harvard A.B. 1894, M.D. 1898; Associate in Pediatrics Harvard Medical School; Physician in Chief to the Children's Department of the Boston Dispensary; Consulting Physician to Boston Children's Hospital. Dr. Ladd writes on "The Feeding of the Normal Infant at Birth." Page 50. Address: 270 Clarendon Street, Boston.

BARNEY, J. DELLINGER. Harvard A.B. 1900, M.D. 1904; Chief of Urological Department Massachusetts General Hospital, Assistant Professor of Genito-Urinary Surgery, Harvard Medical School; Member of the American Urological Association, American Association of Genito-Urinary Surgeons and the International Urological Association. His subject is "Some Observations on the Pathology of the Prostate." Page 53. Address: 87 Marlboro Street, Boston.

RICHARDSON, WYMAN. Harvard A.B. 1917, M.D. 1923; Assistant in Medicine Massachusetts General Hospital. His subject is "Chronic Carbon Monoxide Poisoning. Report of a Case Due to an Exhaust Heater." Page 57. Address: 270 Commonwealth Ave., Boston.

HOWARD, CHARLES D. S.B. in Chemistry, Worcester Polytechnic Institute 1893. Chemist and Toxicologist, N. H. State Board of Health since 1905; Honorary member N. H. Medical Society; Fellow American Public Health Association; Member American Chemical Society and of Federal Commission on Definitions and Standards for Foods. His subject is "Report of a Case of Cyanide Poisoning." Page 58. Address: Concord, N. H.

CRONIN, HERBERT J. M.D. Harvard 1911. He writes on "Toxic Vomiting of Pregnancy. A Case Illustrating the Neurotic Factor." Page 59. Address: 383 Broadway, Cambridge.

SULLIVAN, ELIZABETH ANN. M.D. Tufts 1914. Co-author with Dr. Cronin of article on "Toxic Vomiting of Pregnancy." Page 59. Address: 383 Broadway, Cambridge.

MEDICAL HISTORY

JEAN CIVIALE—PIONEER FRENCH UROLOGIST—1792-1867*

BY WM. PEARCE COUES, M.D.

THE question of priority between Amussat, Leroy d'Etoilles, and Civiale, in the discovery of lithotrity, was one of the bitterest in the annals of French medicine, and though Amussat is given credit for priority of publication of his discovery, Civiale had been working on different models of his instrument since 1817. The idea of removing stones from the bladder without recourse to lithotomy was indeed an old one, going back to Hippocrates himself.

In 1790 General Claude Martine gave new impetus to this problem by his experiment on himself. Being afflicted with the stone, he thought of a possible way of getting rid of it, without being subjected to lithotomy. He introduced a catheter into the bladder, and through this a narrow file, with which he was able to make contact with the stone, and file off several fragments, which afterwards were passed through the urethra. It was some time after this that the French pioneers worked out independently their different bladder instruments for removal of stones.

Jean Civiale was born of poor parents near the town of Aurillac, in the department of Cantal, in July, 1792. In the year 1814 he journeyed to Paris to study medicine, for which science he displayed a strong predilection. His father was unable to give him the slightest help,

*This article is based on the account of Civiale in Stewart's "Hospitals and Surgeons of Paris," Philadelphia, 1843.

and his life in Paris during the early years, was like Dupuytren's, almost unbelievably hard.

Unlike his two rivals, Civiale from the moment he began his medical studies, determined to devote his life to the study of genito-urinary diseases exclusively, this being one of the few examples of such early pre-determination for special life work in medicine.

Civiale began drawing his instruments in 1817 and in 1818 had perfected them sufficiently in his estimation for practical use. Accordingly he forwarded careful drawings and plans of these, with appropriate legends and explanations, to the Minister of the Interior, for examination, and if they were found practical, for help in their manufacture and aid in future experiments. Civiale's drawings were referred to the Medical Faculty, who were directed to examine them and report back to the Minister on their practicability.

What was Civiale's disappointment to receive word back through the Ministry "That the ideas and propositions of the young student were chimerical, and deserved no notice whatever." After a time of depression and discouragement from this rebuff Civiale took heart, and by the greatest care was enabled to save enough money to have some of his instruments roughly fashioned for him. He was enabled thus to begin his experiments on the cadaver and on animals, but was obliged to stop his all absorbing work, so that he might prepare for the examination which led to his medical degree, which he received in 1820. The intense effort had been too much, however, and illness made a return to Aurillac necessary. This stay in his native air did much good, and he returned greatly improved in health, and enthusiastic to plunge again into his experiments. In 1823 he published his description of his instruments, together with a treatise on the stone, having been successful in their use on the living on three different occasions. July 12th, 1824, he gave an account of the results of his operations to the Royal Academy of Sciences, which body appointed a committee for their members, consisting of Baron Percy and Chaussier, who were present at some of his experiments. Success at last crowned the years of waiting. The report of the Academy Committee was very favorable, and indeed the discovery was described as "Glorious for French surgery, honorable for its author and consoling to humanity." It was named "Process of Civiale," "Discovery of Civiale," and "Civiale's Operation."

Material success soon followed and patients flocked to him from far and near, many of which he successfully relieved. In 1826 he was awarded six thousand francs as a *"prix d'encouragement"* and in 1827 the Foundation Monthylon gave him ten thousand francs more.

Many of the foremost surgeons of France were among his patients, perhaps the best known of them being Lisfranc. The Administration des Hopiteaux decided to establish a special service of urology, and two wards at the Necker Hospital were given to Civiale for this purpose.

Honors in recognition of his great work came fast, among the most prized by Civiale being the order of the Polar Star received from the King of Sweden in 1834 and the decoration of the Legion of Honor from Charles the Tenth in 1828.

His library and collection of specimens pertaining to his specialty were the admiration of all who were privileged to have access to them.

Perhaps the most interesting fact concerning this pioneer in urology was his steadfast purpose from youth up, to make this specialty his life work, which purpose no lack of fortune or rebuffs from the medical faculty could discourage. His constant advice to students of his methods was that nothing could be accomplished without extreme care and gentleness, his motto in this connection was: *"Neque magna vi, sed leniter coganter."*

MISCELLANY

COMMISSION ON MEDICAL EDUCATION

UNDER the auspices of the Association of American Medical Colleges, a Commission on Medical Education has been organized as an independent agency to make a study of the various problems of medical education. The Commission is composed of three general groups of members: (1) those interested primarily in general and graduate education, (2) those interested in medical education proper: fundamental sciences, clinical medicine, and pre-medical education; (3) representatives from both the National Board of Medical Examiners and the Federation of State Licensing Boards. Later as special phases of these general questions are taken up, additional personnel may be added to the Commission, or special assignments made to sub-committees for certain study.

The survey will cover a study of pre-medical education, medical education, and the relation of medical education to medical licensure, public health, and medical practice. To complete the survey, it is expected that four of five years will be required.

The desire to make a general study grew out of the rigidity and overcrowding of the present medical curriculum, due to the increasing regulations laid down by various groups interested in the field of medical licensure and medical education, it being felt that a general study of the whole situation should

be made before possible and suggested changes were made.

Since about 80 per cent of the medical graduates go into practice, a number of questions relating to general practice are being studied first, to secure information regarding the needs of various types of communities for medical service.

The second approach to this study is being made on the basis of an analysis of general practice in communities of 50,000 or less in thirty-five states, where information is being secured out of the daily experiences of men in general practice, particularly of relatively recent graduates. This is expected to give a clue as to the demand that is actually being made upon physicians.

The Commission is also assembling information concerning the number of applicants for admission to medical schools, the number who graduate from medical schools relative to the number of admissions, and numerous questions of a statistical character, from information which is largely available in the files of the Council on Medical Education and Hospitals of the American Medical Association.

The essential study is one of professional specifications, and expects to contribute to the problem of the larger responsibilities of medicine from the standpoint of medical personnel, specialization, distribution of physicians relative to needs, relationships of medicine to public health, the recruiting of medical students, and other problems.

Willard C. Rappleye, M.D., is director of this Commission. At the time of receiving this appointment Dr. Rappleye was Professor of Hospital Administration, Yale University School of Medicine, and Director of the New Haven Hospital. The other members are:

Abbott Lawrence Lowell, Ph.D., LL.D., President of Harvard University.

Ray L. Wilbur, M.D., President of Stanford University, President of the Association of American Universities, and a member of the Council on Medical Education and Hospitals of the American Medical Association.

Walter A. Jessup, Ph.D., LL.D., President of the State University of Iowa, and a member of the National Association of State Universities.

Chancellor Samuel P. Capen, Ph.D., LL.D., of the University of Buffalo, and President of the American Council on Education.

Sir Robert A. Falconer, D.Litt., President of the University of Toronto, representing Canadian educational institutions.

Olin West, M.D., Secretary of the American Medical Association, representing the organized medical profession.

Walter L. Bierring, M.D., Des Moines, representing the National Board of Medical Examiners.

George Blumer, M.D., New Haven, representing the Association of American Physicians.

Hugh Cabot, M.D., Dean of the University of Michigan Medical School, and President of the Association of American Medical Colleges.

William Darrach, M.D., Dean of Columbia University College of Physicians and Surgeons, representing the Carnegie Corporation, New York.

David L. Edsall, M.D., Dean of Harvard Medical School, representing the Association of University Professors.

Henry G. Gale, Ph.D., Chicago, Dean of the Ogden Graduate School, representing graduate education.

Thomas S. McDavitt, M.D., St. Paul, President of the Federation of State Medical Boards.

Professor Lafayette B. Mendel, Sc.D., Yale University, of the American Association for the Advancement of Science.

William A. Pusey, M.D., Chicago, of the American Medical Association.

Hans Zinsser, M.D., Boston, of the American Public Health Association.—*Mental Hygiene Bulletin.*

MASSACHUSETTS TUBERCULOSIS LEAGUE

Educational Report for December, 1926

ANNA W. JOHNSON

Towns and Cities Visited	15
Schools Visited	5
Children Addressed	600
Meetings attended and number addressed	
Educational Committee of Boston Tuberculosis Ass'n	6
Sisters of St. Mary's Parish	16
Sisters of Gate of Heaven Parish	15
Teachers' Meetings—Hanover	25
Teachers' Meetings—Leominster	24
Meeting of Boston Health League—Dr. Haven Emerson's Survey	
Field Conferences	30
Office Conferences	27
Letters	190
Sample Sets Sent Out	39
Outside State	8
Library Books Loaned	24
Poster Sets Loaned	15
Play Sets Loaned	2
Mary Gay's Theatre—1 and Films	1
Dolls Loaned—4 and Slides	3
Estimate of Material Sold	
Health Training Books	6
Health Education Procedure	30
Posters	86
Plays	18
Good Health Calendars	52
Educational Books	15

Adult Health Guide	500
Growing Children	1200
Songs	30
Pamphlets—Circulars—Leaflets	70
CRUSADERS ENROLLED	7000

BOSTON TUBERCULOSIS ASSOCIATION NOTES

BERNICE W. BILLINGS, Executive Secretary of the Boston Tuberculosis Association, announces that $40,000 has been raised in Boston from the sale of Christmas Seals. There is still $20,000 more that must be secured in order to attain the $60,000 quota necessary to maintain the new wing for boys at Prendergast Preventorium. It is expected, however, that this amount will be sent in during the next few weeks as there are still thousands of people who have not made returns.

The Association makes a special appeal to everyone to at least send back the Seals if they cannot pay for them as a follow-up letter must be sent to each person who does not make some response to the Christmas Seals. It will mean a great saving of money to the Boston Tuberculosis Association if each recipient will reply.

The first follow-up letters will be sent out around January 15th. Dr. Cleaveland Floyd, Chairman of the Seal Sale, wishes to thank all those who have been so prompt in sending in their money. The sale of Seals at the various local booths was much better than in previous years. Mrs. Reginald Heber White, Chairman of the Christmas Seal Booths, will announce in a few days the exact amount secured at the Seal Booths.

ENDEMIC TYPHUS IN THE UNITED STATES

FROM a study of cases of clinical typhus in the Southeastern United States, Maxcy (*Public Health Reports*, Vol. 41, No. 52) states that

"It has been tentatively accepted that the disease with which we are dealing in the southeastern United States is typhus, because of:

"(1) Its clinical identification with Brill's disease (Maxcy, 1926).

"(2) The Weil-Felix reaction.

"(3) The work of Anderson and Goldberger (1912), identifying the virus of Brill's disease with that of Mexican 'tabardillo.'

"(4) The successful transmission of the disease to Rhesus monkeys and to guinea pigs from cases in Savannah and Montgomery by the author, and the character of the reaction in these animals. (Unpublished report.) Further studies of the activity of this virus in experimental animals and its relation to the European virus are in progress.

"However, granting that the identification of this disease with typhus may be questioned, it may at least be said that the cases here referred to form a clinical group as distinct and as homologous as measles; that they resemble typhus fever much more closely than they resemble any other recognized specific infection, and that as yet they have not been differentiated from that disease. It is in this sense, then, that the designation 'endemic typhus' is used in this paper."

Maxcy's researches lead him to the following conclusions:

"1. A disease giving a positive Weil-Felix reaction, and clinically indistinguishable from typhus fever except with regard to its relative mildness and low fatality rate, is endemic in the southeastern United States.

"2. The epidemiology of this disease appears to differ significantly from that of Old World typhus.

"3. The epidemiological characteristics afford no evidence suggesting louse transmission and are interpreted as being at variance with man-to-man transfer by lice, unless it be assumed at the same time that the disease occurs mostly in unrecognizable form.

"4. It is suggested as an hypothesis which seems to afford a more probable explanation of the mode of transmission that a reservoir exists other than in man, and that this reservoir is in rodents, probably rats or mice, from which the disease is occasionally transmitted to man."

SOURCE OF AUTHORITY FOR POISON ALCOHOL IS ASKED BY SENATE

THE Senate agreed January 4 to Senate Resolution No. 311, introduced by Senator Edwards (Dem.), New Jersey, which calls upon the Secretary of the Treasury for correspondence with the Anti-Saloon League concerning the use of poisonous denaturants in industrial alcohol.

The resolution was passed by unanimous consent after Senator Sheppard (Dem.), Texas, had announced that he had no objection to it, except that he did not accept the language which, to him, seemed to imply that pure grain alcohol is not itself a poison.

In full text the Edwards resolution reads:

"Resolved, That the Secretary of the Treasury is requested to furnish to the Senate at the earliest practicable date all information available in the Department of the Treasury, including all data and reports, and particularly all correspondence had by the Department of the Treasury with the Anti-Saloon League of America or with Wayne B. Wheeler, bearing upon the poisoning of industrial alcohol for the purpose of rendering it unfit for beverage purposes, together with copies of the laws and regulations under the authority of which the Department of

the Treasury requires that industrial alcohol be poisoned for the purpose of rendering it unfit for beverage purposes and the formula prepared and prescribed by the Department of the Treasury for such purpose."—*U. S. Daily.*

DISCUSS HEALTH IN THE COLLEGES

At least one popular belief was shattered at the convention of the American Student Health Association at the Hotel Astor, when Dr. Joseph E. Raycroft of the Department of Hygiene and Physical Education at Princeton University asserted that the use of swimming pools during the winter did not necessarily cause colds among the students.

Health officers from more than fifty colleges and universities from coast to coast were present at the closing session of a two-day convention at which health problems of the students in American colleges were discussed.

Dr. Raycroft produced statistics taken from a survey of 1,000 Princeton students—some of whom frequented the college swimming pool during the coldest weather, and others who did not. The results of his analysis showed that colds and other respiratory diseases were no more prevalent among the swimmers than among those who seldom ventured from their classrooms and the dormitories.

The great danger among students who swim often, according to Dr. Raycroft, is nose or throat infection. Such troubles, he asserted, were at least as prevalent among the swimming pool devotees as among their less energetic classmates.

A number of the health officers spoke strongly in favor of annual health examinations, which should be careful and thorough enough to detect incipient diseases. Among the most important of these was cited ear trouble, which often results in deafness before it is discovered. A resolution was passed urging use of the newly-invented audiometer for testing students' hearing, and forestalling possible cases of ear infection.—*N. Y. Times.*

SUICIDES IN THE CITY OF NEW YORK 1900—1925

A study of suicides in the City of New York for the period from 1900 to 1925 reveals a number of very instructive variations in the yearly suicide rates.

The rate for 1900 was 22 per hundred thousand population. From 1900 to 1904 the rate varied but two points, the rate in 1904 being the same as in 1900. During the next four year period, from 1904 to 1908, there was a sharp decline in the rate followed by a sharp rise. In 1905 the suicide rate was 16 per hundred thousand; in 1906 it rose one point; in 1907 it declined one point and in 1908 it rose to the 1900 level, namely, to 22 per hundred thousand population. From 1908 to 1912 there was a continuous and gradual decline. From 1912 to 1915 the rate rose again. Then, from 1915 to 1920 it declined, reaching the low rate of 12 per hundred thousand in the year 1920. In 1921 the rate again rose. In 1922 it was 15 per hundred thousand; in 1923, 14 per hundred thousand; in 1924, 16 per hundred thousand; and in 1925, 14 per hundred thousand.

The rise and fall in the rates of suicides per hundred thousand population from 1900 to 1925 follow closely the curve of economic prosperity in the United States. For the period from 1900 to 1925, the National Bureau of Economic Research reports the following as the years of economic depression:

1904	mild	economic	depression
1908	full	"	"
1911	mild	"	"
1914	full	"	"
1918	mild	"	"
1921	full	"	"
1924	very mild	economic	depression

It is of interest to note the variation in the methods of suicide most prevalent during the period considered. From 1900 to 1903 the largest number of suicides was committed by poisoning. Death by gun shot is the second most common method of suicide employed. From 1905 to 1908 death by gun shot ranked first, and asphyxiation by illumination gas came second. Since 1909 suicide by asphyxiation ranked first, suicide by gun shot second, and suicide by poisoning third.

The total number of deaths by suicide from 1900 to 1925 was 21,215. Of this number 15,657 were men, and 5,558 were women. We have, therefore, 2.8 times as many men as women suicides.

Considered according to age grouping, we find that the largest number of women committed suicide in the age period of 25 to 29, whereas the largest number of men committed suicide in the age period of 35 to 39.

In the so-called economic crises years, there is a tendency for the larger number of suicides for men and women to come in the older age periods: the men from 40 to 49, the women from 35 to 44.

Of the total number of suicides (21,215), 660 were under twenty years of age, and 928 were over seventy years of age.

In reviewing these figures, it must be borne in mind that the returns on deaths by suicide are never complete, and that there is always a tendency to report a substantial number of suicides, as deaths due to accidents.—*Weekly Bulletin, City of New York, Dept. of Health.*

NO DROP IN DIABETES DEATH RATE

WHILE the November death rate of the industrial population of the United States and Canada crept up to 8.4 per thousand, and is somewhat above the average of the past few years, the statistical bulletin of the Metropolitan Life Insurance Company, whose monthly health reports are based upon the mortality records of 17,000,000 industrial policyholders of the company, declared that there is almost always a rise at this time of the year. At the same time the bulletin sounds a somewhat pessimistic note with respect to diabetes, and says that the extensive use of insulin has not been followed by any appreciable change in the diabetes death rate. The current figure is about the same as ten years ago and higher than fifteen years ago.—*Boston Transcript.*

NEW YORK PHYSIO-THERAPISTS FORM AN ASSOCIATION

THE formation of the New York State Physio-Therapists Association, Inc., with the avowed object of "cleaning up" the practice and coöperating with physicians, was announced by Attorney Matthew B. Price, 165 Broadway, counsel for the organization. Carl G. Miller is its President.

Physio-therapists in general recently have been the subject of inquiry and criticism by various medical societies. The officers of the association expressed approval of the steps physicians had taken to bring the practice of physiotherapy under closer restrictions.

"We desire to coöperate with the medical profession in ridding the practice of undesirable and unqualified physio-therapists," said Mr. Miller, "to assist the medical societies in ascertaining the proper schools to teach physio-therapy, and to promote such reforms in the laws as may be necessary.

"We do not want to be physicians or have the title of doctor. But we strive for a closer understanding between physician and physio-therapists for the good of the patient."

Mr. Price said that the association had voted to leave diagnosis wholly in the hands of physicians. When a patient calls on a physio-therapist of standing, he said, he will be sent to a physician for diagnosis and will not be treated by the physio-therapist except on the advice of the physician. Mr. Price also said that a committee consisting of himself, Mr. Miller and Sol Ratner, Second Vice President of the association, had been appointed to confer with representatives of the New York and Kings County medical societies.—*N. Y. Times.*

CASES REPORTED TO THE MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH FOR THE WEEK ENDING JANUARY 1, 1927

Anterior poliomyelitis	1	Pneumonia, lobar	105
Chickenpox	286	Scarlet fever	405
Diphtheria	121	Septic sore throat	5
Dog-bite requiring anti-rabic treatment	6	Suppurative conjunctivitis	5
German measles	10	Syphilis	16
Gonorrhea	91	Trachoma	2
Influenza	17	Tuberculosis, pulmonary	76
Measles	122	Tuberculosis, other forms	14
Mumps	204	Tuberculosis, hilum	11
Ophthalmia neonatorum	6	Typhoid fever	19
		Whooping cough	121

CONNECTICUT DEPARTMENT OF HEALTH

MORBIDITY REPORT FOR THE WEEK ENDING DECEMBER 31, 1926

Diphtheria	34	Chickenpox	77
Last week	18	Encephalitis, epidemic	1
Diphtheria bacilli carriers	2	German measles	2
Scarlet fever	82	Influenza	13
Last week	60	Mumps	10
Typhoid fever	5	Pneumonia, lobar	43
Last week	2	Poliomyelitis	1
Measles	28	Septic sore throat	1
Last week	29	Tuberculosis, pulmonary	22
Whooping cough	47	Tuberculosis, other forms	2
Last week	28	Gonorrhea	14
Bronchopneumonia	40	Syphilis	13
Cerebrospinal meningitis	1		

RECENT DEATH

BERGESON—DR. JOHN BERGESON, a practising physician of Boston, died at his home in Newton Centre, January 1, 1927, at the age of 63.

Dr. Bergeson was born in Earlville, Ill., on May 5, 1863. He was graduated from Mt. Morris Academy at Mt. Morris, Ill., and from the University of Iowa Medical Department with the degree of M.D. in 1888. He took post-graduate courses in Vienna and at the Sorbonne in Paris.

He practiced three years in Wisconsin, being physician on an Indian reservation in that State one year. He then came to Boston and established a practice.

In 1908 he married Miss Charlotte True, and they made their home in Newton Centre. He is survived by Mrs. Bergeson and three children. He was a member of the Masonic fraternity and was affiliated with Trinity Church, Newton Centre.

OBITUARIES

RESOLUTIONS ON THE DEATH OF DR. GEORGE H. BINNEY

Whereas, Dr. George H. Binney faithfully served the Boston Dispensary twelve years on the Surgical Staff; and

Whereas, By his character and personality he endeared himself in the hearts of his associates, be it

Resolved, That the Clinical Staff of the Boston Dispensary expresses its regret at his loss

as a conscientious worker and valued associate; and be it further

Resolved, That copies of these resolutions be sent to his wife and mother as a token of the wish of the Staff to participate in their bereavement.

DEATH OF DR. G. S. HUNTINGTON, ANATOMIST

Dr. George Sumner Huntington, Professor of Anatomy at Columbia University from 1889 until 1925, and said by Dr. Samuel Lambert, President of the Academy of Medicine, to be recognized internationally as the greatest anatomist of modern times, died Jan. 5th at his home, 277 Park Avenue, after an illness of several months. He was 65 years old.

According to Dr. Lambert, Dr. Huntington was the first teacher of anatomy to place the science on an evolutionary basis. He wrote voluminously, both books and pamphlets, which not only brought him a world-wide reputation among doctors, but which influenced the development of the medical profession in the past generation incalculably.

"Before Dr. Huntington's time," said Dr. Lambert, "the bulk of the teaching of anatomy was done with skeletons. He took the soft organs of the body, and traced their development from similar organs in lower animals than man. His writings covered all phases of anatomy, and some of them, notably his book on 'The Anatomy of the Peritoneum,' are standards in the profession.

"In actual teaching, also, his influence was great. The graduates of his laboratory include many notable men, a group of surgeons known both here and in Europe for their accomplishments."

Dr. Huntington was born in Hartford, Conn., the son of Hezekiah and Katherine Brinley Sumner Huntington. He was graduated from Trinity College in Hartford in 1881 and obtained the degree of M.D. at the College of Physicians and Surgeons of Columbia University in 1884.

After two years as an interne in Roosevelt Hospital he took up in 1886 the teaching career which he followed until two years ago, being first an assistant demonstrator of anatomy and a lecturer at Columbia until 1889, when he obtained his profesorship. For many years he edited the *Journal of Anatomy and Physiology.* For a time, in his earlier career, he was assistant attending surgeon at Roosevelt Hospital and at Bellevue, and then chief surgeon at the Vanderbilt Clinic.

He received the degree of M.A. from Trinity, Doctor of Laws from Jefferson Medical College and Doctor of Science from Columbia. He was a member of the University Club, the Alpha Delta Phi fraternity and many scientific societies.—*N. Y. Times.*

NEWS ITEMS

NEW QUARTERS FOR JOHNS HOPKINS PSYCHOLOGICAL LABORATORY — The psychological laboratory of the Johns Hopkins University has moved into new quarters just off the Homewood campus. The plant comprises a four-story brick building, originally designed for hospital use, but well adapted for the purpose of a psychological laboratory; with a three-story house attached. The Psychology Department, originally occupying five rooms in the biology building at the old university site, has, for the last ten years, been crowded into attic space in Gilman Hall at Homewood. Certain important lines of research have been practically discontinued on account of the lack of space and quiet. Work on infants and young children, which was being initiated before the recent move, can now be developed by the use of the three-story building, which will be devoted exclusively to child research.—*Science.*

DR. LEONOR MICHAELIS, professor of physical chemistry applied to medicine, Friedrich Wilhelm University, Berlin, and now visiting professor at the Johns Hopkins University, will deliver the third Harvey Society lecture, at the New York Academy of Medicine (new building, 103rd Street and Fifth Avenue), on January 22, at 8:30. His subject will be "Some Problems Concerning the Acid and the Enzymes of the Gastric Juice."—*Science.*

DR. SAMUEL W. LAMBERT has been elected president of the New York Academy of Medicine for a period of two years; Dr. William H. Park, vice-president for three years; Dr. Seth M. Milliken, treasurer for three years, and Drs. Samuel A. Brown and Charles L. Dana, trustees for five years.—*Science.*

CONVICTION OF HERBERT C. PENNY—Herbert C. Penny, 22 Cazenove Street, Boston, was convicted December 24, 1926, of holding himself out as a practitioner of medicine without being registered and also for violation of the law relating to advertisements of places where treatment of venereal diseases may be obtained.

Fined one hundred dollars on the first count and fifty dollars for violation of the venereal disease law. He took an appeal.

DR. M. J. KONIKOW has returned from abroad and reopened his office at 636 Beacon Street. He will specialize in gynaecology and obstetrics.

Dr. Joseph Chandler, formerly associate professor of chemistry at Boston University School of Medicine, has accepted an appointment as associate professor of chemistry at Hahnemann Medical College, Philadelphia.

Dr. Chandler is a graduate of Johns Hopkins University and has been engaged in the teaching of chemistry for several years past. He was active in the organization of the course on the history of science at Boston University and as a member of the chemical warfare service has been prominent in the affairs of that branch of the military service. Dr. Chandler took up his new duties January 1.—*Boston University Press Bureau, Boston, Mass.*

J. Alfred Howard of Marlboro Street was fined $100 for holding himself out as a practitioner when he was not registered.

NOTICE

WINTER TRAINING, MEDICAL DEPARTMENT RESERVE OFFICERS

The next meeting in the Winter Training Schedule for Reserve Medical Department Officers of Boston and vicinity will be held at the Army and Navy Club, Hotel Bellevue, Beacon Street, Boston, Mass., on January 12, 1927, at 8 P. M.

This meeting will have one of the best programs given so far in the course.

Captain Dean continues his talk on essential paper work. Major Greenwall of Fort Banks Hospital will take up Medical Department Administration and Routine Duties of the Medical Officer, Medical Attendance and Sick Call, while Major Henry M. Emmons, Med-Res., will discuss Medical Regiments of Army, Corps, Infantry and Cavalry Divisions.

You are urged to attend and bring another reserve officer or friend with you.

For the Corps Area Surgeon:

HENRY S. BECKFORD, *Major, M.C.*, (*DOL*).

REPORTS AND NOTICES OF MEETINGS

NEW ENGLAND INSTITUTE FOR TUBERCULOSIS WORKERS

THE New England Institute for Tuberculosis Workers is a training course for those who are already engaged in tuberculosis work or who wish to enter this field. The dates are January 31 to February 12, 1927. The place is Boston, Mass. The Institute is conducted under the auspices of the National Tuberculosis Association and the New England Tuberculosis Secretaries Conference. This Institute is one of a series of Regional Institutes to be given in 1927 under the auspices of the National Tuberculosis Association and various State Associations in Indianapolis, Philadelphia and Portland, Ore.

OBJECTS

The Institute has four main objectives: To assist workers already in executive positions in the tuberculosis field to assume positions of greater responsibility, or to be more useful in their present positions; to prepare for executive positions those who have not had experience in the tuberculosis field; to give to volunteer workers a more comprehensive knowledge of the administrative problems involved in this work; to aid in the standardization of methods and programs of tuberculosis work.

OUTLINE OF COURSE

I. Methods of Anti-Tuberculosis Work

(1) Educational Methods

Exhibits, publicity, literature, Modern Health Crusade, Christmas seal campaigns, conduct of conferences and meetings, etc.

(2) Organization

Constitution and by-laws, working committees, getting related groups to work, personalities, meetings of boards and committees, office organizations, the psychology of community organization, etc.

(3) Dispensaries

Establishment, organization and equipment, staff, records, costs, functions, etc.

(4) Care of Sub-Standard Children

Case-finding; institutions such as open air schools, preventoria, summer camps, etc.; after care; nutrition classes, etc.

(5) Medical Service

Medical education, consultation service, standardized technique, medical and scientific basis of tuberculosis campaign, etc.

(6) Surveys

Preliminary work, kind of surveys, getting the facts, presenting the facts, etc.

(7) Nursing

How to get a good nurse, the nurse and the dispensary, urban vs. rural problems, the nurse in the home, the nurse in the community, general vs. specialized nursing, nursing as a public function, etc.

(8) Institutional Methods

Anti-tuberculosis societies in relation to public and private institutions, state vs. local hospitals, operation of a sanatorium or hospital, follow-up and social service work, hospital records, etc.

(9) Industrial Work

Occupational mortality, medical examination of employees, employees' relief association, health work in factories, health insurance, etc.

(10) Co-operation with City and State Officials

With the local boards of health, with county boards of health, with state boards of health, with various city departments, etc.

(11) Statistical Methods

Vital statistics, interpreting vital statistics, use of statistical data, etc.

II. Programs of Anti-Tuberculosis Work

(1) Programs for Local Work

Education, hospitals and sanatoria, dispensaries, nurses, open air schools, industrial work, municipal legislation, co-operation with city officials, interrelation and co-ordination, programs for small towns and rural communities, for large cities, etc. The Framingham idea, possibilities of the demonstration, Milbank Fund plan, etc.

(2) Programs for State Work

Prevention of infection, increasing resistance, care of curable cases, working with local and state groups, the functions of the state associations in relation to the State Board of Health, etc.

(3) Program for the Nation

History of national movement, policies of the National Association, methods of national work, etc.

III. Relation of the Tuberculosis Campaign to Other Social and Public Health Movements

Boards of health, American Public Health Association, infant mortality movement, pure milk campaigns, housing campaign, temperance movement, charity organization and similar societies.

METHODS OF WORK

The Institute does not follow the usual classroom or lecture method. The round-table conference with discussion prepared and directed by the conductor is in the main the method employed. Each of the various topics indicated in the foregoing outline is presented by an expert in that particular line and the subject is thoroughly discussed by him and the director, with ample opportunity for class discussion, comments and questions. "Scenarios," or practical applications of teaching, are used to demonstrate certain features. Reading and written papers are also required.

Since the membership of the Institute is strictly limited, every possible opportunity for intensive study is afforded.

FEES AND EXPENSES

The only charge for the Institute will be a registration fee of ten dollars ($10). This fee is payable at the School on registration day, January 31, 1927. Members are requested not to send fees in advance of this date. The sessions of the institute will be held at the Harvard University School of Public Health, 55 Van Dyke Street, Boston, Mass. For living expenses in Boston, it is desirable to allow about $50 for two weeks, though a limited number of accommodations at lower rates can be secured. Information on hotels and boarding houses will be furnished by Frank Kiernan, Executive Secretary, Massachusetts Tuberculosis League, 1148 Little Building, Boston, Mass.

ADMISSION

Membership in the Institute is by invitation in every case. Those who are interested in attending should write to Frank Kiernan, 1148 Little Building, Boston, or to Philip P. Jacobs, 370 Seventh Avenue, New York. Persons from any part of the United States may apply, but preference will be given to applicants from the New England States. Invitations will be issued to not more than thirty.

For information about tuberculosis institutes in other parts of the United States write the National Tuberculosis Association, 370 Seventh Avenue, New York City.

NEW ENGLAND ASSOCIATION FOR PHYSICAL THERAPEUTICS

THE twenty-first anniversary meeting of the New England Association for Physical Therapeutics will be held Wednesday, January 19, at the Reconstruction Clinic, 366 Commonwealth Avenue, Boston, Mass. (near Mass. Subway.)

Clinical Demonstration 7 to 8:30 p. m.

All regular physicians are welcome.

Regular meeting and election of officers 8:30 p. m.

A collation will be served at the close of the meeting.

Dinner will be served, as usual, at the Square and Compass Club, 448 Beacon Street, Boston, at 6 p. m.

A special lunch will be served to the Executive Council and invited guests, at the New England Sanitarium, Melrose, Mass., by courtesy of the management, at 1:30 p. m., which will be followed by a Council meeting.

NEW ENGLAND PEDIATRIC SOCIETY

THE ninety-ninth meeting of the New England Pediatric Society will be held at the Boston Medical Library on Friday, January 14, 1927, at 8:15 P. M.

The following papers will be presented:

1. Duodenal Atresia and Stenosis in Infancy. Augustus Thorndike, Jr., M.D., Boston
2. Milk from the Point of View of the Public Health Official. George H. Bigelow, M.D., Commissioner of Public Health, Boston.

Light refreshments will be served after the meeting. J. HERBERT YOUNG, M.D., *President.*
THOMAS H. LANMAN, M.D., *Secretary.*

CONFERENCE OF VENEREAL DISEASE CONTROL OFFICERS AND CLINICIANS

A CONFERENCE of Venereal Disease Control Officers and Clinicians will be held under the auspices of the United States Public Health Service, New York State Department of Health, New York City Department of Health, at Bellevue-Yorkville Health Center Building, 325 East 38th Street, New York City, January 20, 1927.

PROGRAM

9 A. M.—Meeting opened by Dr. Thomas Parran, Jr., Assistant Surgeon General (introduced by Dr. Pfeiffer).

Clinical Section—Dr. Keyes, Jr., chairman. Ten-minute papers on the diagnosis and treatment of gonorrhea. Each paper to cover: (1) Diagnosis. (2) Treatment. (3) Standardization of Cure—(a) The Male; (b) The Female (Dr. Ward); (c) Vulvovaginitis (Dr. Hamilton).

12:30 to 2 P. M.—Luncheon (given by the American Social Hygiene Association).

2 P. M.—Administration Section—Dr. Parran, Jr., chairman.

Addresses by Dr. Matthias Nicoll, Jr., Dr. Louis I. Harris and Dr. William F. Snow (not over five minutes each).

Follow-up Work (Dr. Fisher, ten minutes).

The Coördination of and the Value of Coöperating Agencies to a Clinic (Miss Affold, ten minutes).

Ophthalmia Neonatorum — A Neglected Problem (Dr. Pfeiffer).

Other topics for discussion:

(1) Printed instructions to patients regarding care and danger to community.

NORFOLK SOUTH DISTRICT MEDICAL SOCIETY

A MEETING for Medical Improvement was held on Thursday, January 6, 1927, at 12 o'clock noon at the Norfolk County Hospital, South Braintree. Speaker: Dr. Edwin H. Place, Physician in Chief, South Dept., Boston City Hospital. Subject: "Scarlet Fever."

Dr. Place told of his experience with Scarlet Fever Antitoxin. His talk was illustrated.

N. R. PILLSBURY, M.D., *Sec'y.*,
South Braintree, Mass.

W. G. CURTIS, M.D., *Pres.*,
Wollaston, Mass.

THE LYNN MEDICAL FRATERNITY MEETING

THE Lynn Medical Fraternity held a regular meeting and dinner at the Deer Cove Inn, Dec. 16, 1926.

The speaker of the evening was Dr. John Lovett Morse of Boston whose topic was "Vomiting in Infancy and Childhood."

Dr. George H. Bigelow, Commissioner of Public Health for the Commowealth, was also a guest.

WM. T. HOPKINS, *Reporter.*

NEW ENGLAND OPHTHALMOLOGICAL SOCIETY

THERE will be a meeting of the New England Ophthalmological Society on Tuesday, January 18, at the Massachusetts Eye and Ear Infirmary at 8 P. M.

HARVARD MEDICAL SOCIETY MEETS

THE last regular meeting of the Harvard Medical Society was held Tuesday evening, Dec. 21, at the Peter Bent Brigham Hospital. The program for the evening was demonstration of cases, and a lecture illustrated by moving pictures on "The Development of Human Motility," by Dr. George S. Schaltenbrand.

Dr. Fulton of the hospital presented a case from the medical service.

The case, a man of 61, six years ago experienced sensations of palpitation of the heart. Upon examination shortly thereafter he had a blood pressure of 220 systolic, and albumen was found in his urine. Since this time up to the present he has had intermittent spells of shortness of breath, periods of very severe abdominal pain, and a continued elevated blood pressure, but has not given up work, except for short periods. His present physical examination revealed dyspnoea, a blood pressure of 175 systolic over 130 diastolic, arteriosclerosis of the radial and brachial vessels, a slight trace of albumen with cells and casts in the urine, and a marked enlargement of the heart. There was a forceful apex impulse with but a very weak pulse. On November 26 he had a very sudden onset of severe epigastric pain, which lasted for an hour before being relieved by morphine. During the subsequent four days he had this pain intermittently, a tarry stool, and spasticity of the abdomen at the time of the attacks. His white count rose to 11,000 and he became extremely drowsy. A mesenteric thrombus, resulting in an intestinal infarction, or a subacute perforation of a neoplasm was suspected. His past history favored the latter, but in the absence of fever, and with leucocytosis, an increase in the spasticity of his abdomen, the absence of fluid in the abdominal cavity, the evidence of intestinal hemorrhage, the likelihood of the former was considerable. A barium enema showed no pathological condition, and operation was advised. Upon operation, an infarcted area in the jejunum about 18 cm. in length with two thrombosed mesenteric vessels, was found. The gangrenous area was resected, a lateral anastomosis was done and the patient stood the operation unusually well. Since operation his course has been uneventful, and his progress has been normal. His blood pressure has dropped some, his kidney symptoms have decreased, and he has had no recurrence of abdominal pain.

Dr. Sosman, Chairman, in discussing the case said, "There are two very interesting points here. One is that the situation of infarct is high, and high infarcts are usually fatal. The second point is the recognition of this infarct

or thrombus and the proper surgical treatment for it, as the majority of cases are recognized first at autopsy and not on the operating table."

The second case presented was surgical, presented by Dr. Barr of the hospital.

The case was a housewife of 69, married, with eight normal pregnancies. Her family history was negative, also her past history except that 13 years ago she had a sudden attack of right upper quadrant pain, severe in character, lasting 24 hours, and radiating to the back and left abdomen. Her physician diagnosed it as gall stone colic, and examination of stools revealed a gall stone. Since this time she has had no recurrence of pain until her present illness, which began 15 days before her entry, with pain in the right lower quadrant, sharp in character and radiating to the left abdomen and to the back. Also she vomited copious quantities of greenish material after each meal. Upon entry November 28, she showed well marked spasm in the right abdomen. A mass, which was rather indistinct because of her panniculus, was felt in this region. Her bowels have been irregular and she has vomited considerably. The tentative diagnosis was carcinoma of the colon, with intestinal obstruction. She was given a barium enema which showed no pathology, the colon filled well, there were no irregularities, and peristalsis was normal. Flat plates of the urinary tract were taken which showed opacity in the region of the left renal pelvis, possibly caused by a renal calculus. At this time her white count was 10,600, red count 4,500,000 and hemoglobin 60%. Her urine showed a slight trace of albumen, and red cells on several examinations. Intravenous cholecystograms showed no visible gall bladder shadow at 12, 14 or 16 hours, which was interpreted as meaning there was some pathology of the gall bladder. However, due to a past history of four months' hematuria, together with the renal shadow above and the red cells in the urine, pathology of the kidneys was suspected. A cystoscopy was done on December 14, and the ureters could not be catheterized due to a marked cystocele. A diagnosis of hydrops of the gall bladder or of ovarian cyst was made and operation followed. A very large gall bladder extending down to McBurney's Point and a large liver were found. The gall bladder was removed and a large calculus was found.

The patient has made an uneventful recovery and her symptoms have not recurred since operation.

Dr. Barr explained the presence of red cells in the urine as due to the possible presence of a renal stone, which caused a certain amount of irritation of the renal pelvis with hematuria and pyuria.

Dr. Sosman in discussing the case said that the mass was so low and so large, and the pain radiation so typical, that cyst of the ovary was logical—and that therefore the case was an atypical gall bladder.

Dr. Sosman then introduced the speaker of the evening, Dr. G. Schaltenbrand, who is at present a Fellow of the Rockefeller Foundation, and is engaged in research work under Dr. Stanley Cobb of the Neuropathology Department of the Harvard Medical School. Dr. Schaltenbrand is from Hamburg, Germany, and at one time worked under Professor Magnus, eminent Dutch Physiologist of the University of Utrecht. His subject was "The Development of Human Motility." Dr. Schaltenbrand began his discussion by saying that our ancestors were four-legged walkers who carried their bodies horizontally like all the rest of the lower animals. In studying the posture of this type, motility must be divided into two large groups of different movements. One of them is cortical in origin and deals with the finer adjustments of isolated movements to visual, acoustic, and tactile stimuli. This motility is localized in the gigantopyramidalis area and precentral region of man. The other is subcortical motility, and consists in coarse responses to sensory stimuli and those stimuli which are necessary for standing, and locomotion. This motility is located in the lower parts of the central nervous system and especially in the midbrain and brain stem. In the course of development there is a slight shift of motor functions from downwards upwards, and the higher we go in development, the more functions are carried out by the cortex. To illustrate this point Dr. Schaltenbrand exhibited a decorticated cat which, while a perfect idiot, still showed a considerable amount of motility. A man, decorticated, would not have as many functions as the cat showed.

Principal motility, according to Dr. Schaltenbrand, is simply, "normal position," but this term includes the enormous number of different reflexes and reactions of which we are capable. It is impossible to put a flaccid cadaver on its feet so it will not fall, except of course, in rigor mortis. In the live subject, however, there is just enough stiffness to render the body erect without falling. This is called tone. This tone is produced by many different reflexes localized in the spinal cord and medulla oblongata, one group of which, the Magnus de Kleyne reflexes, is worthy of note here. These reflexes consist in a change of position of the limbs which occur reflexly when the position of the head relative to the body is altered. While positive in the lower animals, these reflexes become more and more negative as the scale ascends to man, though the same condition may be produced in animals in an exaggerated way by producing decerebrate rigidity. This rigidity may be produced by brain tumors, a diseased process, anaesthesia of the brain, or by an operation which bisects the brain stem at a certain level. Normal adults do not show this tonic reflex at all, though it is found in about 10% of human babies in the first year.

Now tone and posture are not everything. Magnus and his school described another series of reflexes called "stellreflex," or righting reflexes. These are divided into three groups, viz., those from the labyrinth, from the neck, and the body-righting reflex. The first keeps the head in the normal position, the second always brings the body to the same position which the head has already attained, and the third brings about a normal position through

deep pressure sensation in those parts which are resting on the floor. Normally, these three reflexes act together. The cat first turns over the head, then the shoulder girdle, and finally the hips. The normal man simply rolls his body symmetrically to a sitting position and stands on his legs. This movement while common to man is a late acquisition. Babies duplicate the actions of the cat, taking the first five years more or less to simplify to the adult action the movements of standing. Thus, the tendency to rotate the spine disappears in favor of the symmetrical flexion and extension of the spine.

There is also a reflex familiar in babies connected with the labyrinth-righting reflex and the neck-righting reflex known as the lumbar reflex. A baby a year old, if held in the hand, will lift up its head through this labyrinth-righting reflex and as a counter-resistance will get tonic stretching of the whole body arching upwards. If the head is pressed down, this arch disappears and the body appears clasped together like a pocket knife. The characteristic feature of the development of this is connected, of course, with the fact that man has an erect posture while animals have a horizontal position, thus again emphasizing the concluding statement of the last paragraph.

There are a few other points of interest connected with this development. A baby's legs and arms are usually approximately in a rectangular position to the body with flexion quite evident, the physiological flexion position, while in the adults the legs are in a horizontal position with the body axis. Again the baby may be compared with quadrupeds.

Again, if the length of the legs of the baby is compared with the length of the body, the legs are found proportionately shorter than in adults. This hypertrophy of the adult leg is a necessity because they are the only means of support and propulsion. This hypertrophy is also important in the movement of symmetrically standing up from the floor.

The third point is to compare profile cross-sections of the trunk of animals and man. In animals it is oval with the long axis in the sagittal plane, while in man it is oval with the long axis in the coronal plane. This has to do with the strong development of the dorso-ventral muscle chains in man which are necessary to counterbalance the trunk and head.

This development of the different reflexes and especially the movement of standing and changes during the first years of life confirm Haeckel's theory that autogenesis recapitulates phylogenesis.

All of the above reflexes are similar to animal reflexes. However, there are some reflexes which are found only in the baby and are absent in the adult man or animal. These are called Mara reflexes, after their first describer, and are present only during the first three months of life. They consist in stretching and abducting the four extremities, followed by abduction and flexion. These responses are elicited by all kinds of passive movements, especially by stimuli of the labyrinth. Mara thinks that these are remnants of our tree-climbing ancestors whose babies had to fasten themselves to the body of the mother and every time the mother made a big jump they had to hold more tightly. The only comparable reflex in the adult is the jumping reflex when the appendages are outstretched, the body hanging free and suddenly moved downwards. It is the midbrain reflex coming from the semicircular canal of the labyrinth.

Dr. Schaltenbrand concluded his lecture by motion pictures illustrating the various reflexes in children.

MEETING OF THE SOCIETY FOR EXPERIMENTAL BIOLOGY AND MEDICINE

THE December meeting of the Society for Experimental Biology and Medicine, Massachusetts Branch, was held Wednesday afternoon, December 15, 1926, in the Nash Lecture Room, University Museum, Cambridge. The program consisted of several papers by members of the Society.

The first paper was "Temperature Characteristics for the Embryonic Heart," by W. J. Crozier and T. J. B. Stier of the Laboratory of General Physiology, Harvard University. In their work the relationship between temperature and the frequency of cardiac contractions during stages of development when the (myogenic) heart is still devoid of a nervous system was determined in Limulus embryos, by a special thermostat. The temperature characteristics obtained were not the same in all individuals, but in practically every case, increase in temperature over that which is typical for the thermal control of frequency of contraction in the heart of an adult, resulted in an increased heart rhythm. The critical temperatures for heart rhythm also differed among individuals, ranging from 9°C. to 45°C. These results are chiefly important as indicating relatively greater metabolic lability in embryonic than in adult tissues. It was concluded that the apparent inconstancy obtained of temperature for contraction rate is due to the presence of several functional pacemakers having temperature characteristics. It cannot be held that temperature characteristics are determined by the organism as a whole; for the movements of heart and of gills show different temperature—contraction rate values in the same individual at the same time; and also the critical temperatures for the two activities do not coincide. Therefore the

critical increments or the temperature characteristics have a specific, local, significance.

The second paper was "Notes on the Pyridine Test for Chloroform Applied to Extracts of the Brain," by W. H. Cole, from the Biological Laboratories of Clark University, Worcester, Mass. He reported that the aqueous extracts of the brains of animals killed by inhaling chloroform have all shown the presence of chloroform by the pyridine test, while similar extracts of animals killed by other means have been negative for chloroform. Also that chloroform in animal tissues persists unchanged for many days after death and decay. The chloroform present in extracts of brains from rats killed by inhaling different dosages of chloroform was measured by the pyridine colorimetric method, also that found in the brains of lightly and deeply anesthetized rats. The results obtained indicated that the amount of chloroform present in the brains of rats at the time of death varied directly with the dosage, that is, the amount of chloroform in the brains of rats killed by chloroform is not constant. This fact was explained by assuming that the immediate cause of death from chloroform is exerted on some tissue or organ other than the brain, or that the effect of chloroform on the brain is secondary in so far as death is concerned. Mr. Cole stated that further experiments were being done to identify the tissue or organ whose poisoning by chloroform causes death.

The last paper was that of A. E. Mavez, of the Department of Physiology of Harvard University, on "Galvanotropism of Roots." Mr. Mavez opened his discussion by stating the conclusions concerning the galvanotropic responses of roots which have resulted from experimentation in plant irritability, by many workers. *These are:* For high densities of current or long exposures, anodic curvature, and for low densities of current or short exposures, cathodic curvature or genuine galvanotropic response results. Since opinions differ as to the origin ascribed to this last curvature, Mr. Mavez undertook to reproduce the experiments which have led to the present theories, but elaborated the technic to avoid the errors pointed out in these experiments heretofore done. Non polarisable zinc sulphate electrodes were used, agar blocks were used to prevent diffusion of electrolytic products, and variable densities of current were secured by the use of troughs of a definite shape and size. Under these conditions it was found that no cathodic curvature resulted, where as in a trough without the agar blocks, all the roots curved, the degree being a function of the duration of the current. The immediate conclusion was that the products of electrolysis act directly to produce "galvanotropic" curvature. It was shown that the current itself was not indispensable to cause a curvature, and concluded that it simply determines the direction of curvature. These results were interpreted as follows: In experiments on plant irritability where the galvanotropic response of roots is being determined, the toxic effects of electrolysis products and the increase in toxic effects of these products due to persistence of the current, must be considered.

SOCIETY MEETINGS

District Medical Societies

Essex North District Medical Society

Wednesday, May 4, 1927—Annual meeting. Russell Hall, Young Men's Christian Association Building, 40 Lawrence Street, Lawrence.

Thursday, May 5, 1927—Censors meet for examination of candidates at Hotel Bartlett, 95 Main Street, Haverhill, at 2 P. M.

Essex South District Medical Society

Wednesday, February 2, 1927—Hawthorne Hotel, Salem. Dr. H. H. Clute of the Lahey Clinic, "Differential Diagnosis and Treatment of Thyroid Disease." Discussion by Drs. Johnson of Beverly and Field of Salem, ten minutes each.

Wednesday, March 2, 1927—Lynn Hospital. Clinic, 5 P. M.; supper, 7 P. M. Dr. George Minot, "Pernicious Anemia, with Special Reference to Liver Diet." Discussion by Drs. Sargent of Salem and Reynolds of Danvers, ten minutes each.

Wednesday, April 6, 1927—Danvers State Hospital. Clinic, 5 P. M. Dr. Allan W. Rowe, Chief of Research Service at Evans Memorial, "The Differential Diagnosis of Endocrine Disorders." Followed by dinner. Discussion by Drs. Wood of Hathorne and Kline of Beverly, ten minutes each.

Thursday, May 5, 1927—Censors meet for examination of candidates at the Salem Hospital, 3:30 P. M.

Wednesday, May 11, 1927—Annual meeting. The Tavern, Gloucester. Speaker and subject to be announced later.

Norfolk District Medical Society

Below are the proposed meetings of the Norfolk District for the remainder of the year. Minor changes may be made in case of necessity.

January 25, 1927—Peter Bent Brigham Hospital. Dr. Harvey Cushing. Time of meeting and subject to be announced.

March 1, 1927—Roxbury Masonic Temple, 8:15 P. M. Dr. Robert B. Greenough. To be devoted to a talk on cancer, with a résumé of the results of colloidal lead treatment.

March 29, 1927—Roxbury Masonic Temple, 8:15 P. M. Drs. F. S. Newell and F. J. Irving, "The Modern Treatment of the Eclampsias and Toxaemias of Pregnancy." If time permits—"The Modern Methods of Handling Prospective Caesarean Cases."

May 10, 1927—Annual meeting. Details of meeting to be announced.

Suffolk District Medical Society

Meetings of the Suffolk District Medical Society and the Boston Medical Library will be held at the Boston Medical Library, 8 The Fenway, Boston, at 8:15 P. M., as follows:

January 26, 1927—General meeting in association with the Boston Medical Library. "Medical Work at the Metropolitan Life Insurance Company," Dr. Augustus I. Knight, Medical Director, Metropolitan Life Insurance Company.

February 23, 1927—Surgical Section. "Clinic on Neurological Cases at the Peter Bent Brigham Hospital," Dr. Harvey Cushing.

March 30, 1927—Medical Section. Subject and speaker to be announced later.

April 27, 1927—Annual meeting. Election of officers. "Medical Education in the Orient and Occident," Dr. David L. Edsall, Dean, Harvard Medical School.

Notices of meetings must reach the JOURNAL office on the Friday preceding the date of issue in which they are to appear.